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KURS ISHI

Mavzu:Talabalar turar joyini axborot tizimi.

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Informatika vositalari jamiyatimizning barcha jabhalariga tobora kirib borayotgani, axborotni tez va sifatli qayta ishlash malakasi o'sib kelayotgan har bir yoshning turmush talabiga aylanishini ko'rsatib bermoqda.

Obektga yo'naltirilgan dasturlash tili fanining asosiy maqsadi foydalanuvchilar uchun EXMlarda ishlashni oson va qulaylashtirish, ularni vaqtlarini tejash va dasturlar yaratib foydalanuvchilarni ishini osonlashtirish va yaratilgan dasturlarni hayotning turli jabhalarida qo'llashdan iborat. Obektga yo'naltirilgan dasturlash tili fanidan kurs ishi tayyorlash mobaynida men Java dasturlash tili bilan, Microsoft Access dasturni Java dasturiga bog'lab ishlash bo'yicha tajribalarimni yanada oshirib Java muhiti bilan chuqurroq tanishaman. Ko'pgina yangi kompanentalar bilan tanishib, ular ustida ishlash ko'nikmasini ortirishga harakat qilaman. Kurs ishimni bajarib, Microsoft Office Access 2010 va Java dasturlari bilan ishlashni o'rganaman.

Accessda yangi satrlar, yangi ustunlar xosil qilishni, ularga ishlov berishni o'rganaman. Jadvallarni xosil qilishning oddiy va konstruktor rejimlarini o'rganib chiqaman. Xosil qilingan jadvallarni bir biriga bog'lash orqali ma'lumotlar sxemasini tuzishni o'rganaman. Xosil qilingan ma'lumotlar bazasini ximoyalash uchun uni kodlashni o'rganaman.

Java dasturlash tilida dastur yaratishda ishlatiladigan operatorlar, java swing bilan ishlashni va undan dastur tuzishda foydalanishni, klaslar bilan ishlashni, obyekt yaratib, obyektlar ustida ishlash kabilarni o'rganib ulardan dastur tuzishda foydalanishni o'rganaman.

Men kurs ishimda "Talabalar turar joyini avtomatlashtirish" mavzusini tanladim. Chunki har bir o'quv muassasidagi kutubxonalar yoki shahrimizdagi har bir kutubxonalarda kitobxonlarga kitoblar berish, ularni qaytarish va kerakli kitoblarni izlashda kutubxona xodimlari vaqtini yuqotadi. Agarda kutubxona ishini avtomatlashtirsak bunda xodimlar ishi osonlashadi va kerakli kitoblar bor yuqligi, ular soni nechtaligi yoki qaysi kitobxondaligi, qachon qaytarilishi lozimligi har biri kompyuterga kiritilib borilsa shunda kutubxona xodimlari ishi yengillashadi. Java dasturlash tilida tuzadigan dasturim esa ma'lumotlardan foydalanishda va ularni qayta ishlashda vizual formalar orqali foydalanuvchiga ko'maklashadi. Bu esa albatta vaqtni tejashga yordam beradi.

2. Nazariy qism .

2.1 Java dasturlash tili haqida.

Java dasturlash tili - eng yaxshi dasturlash tillaridan biri bo'lib unda korporativ darajadagi mahsulotlarni(dasturlarni) yaratish mumkin. Bu dasturlash tili **Oak**dasturlash tili asosida paydo bo'ldi. Oak(ma'nosi eman daraxti) dasturlash tili 90-yillarning boshida **Sun Microsystems**(hozirda **Oracle** nomidan ish yuritadi) tomonidan platformaga(operatsion tizimga) bog'liq bo'lmagan holda ishlovchi yangi avlod aqlli qurilmalarini yaratishni maqsad qilib harakat boshlagan edi. Bunga erishish uchun Sun hodimlari **C++** ni ishlatishni rejalashtirdilar, lekin ba'zi sabablarga ko'ra bu fikridan voz kechishdi. Oak muvofaqiyatsiz chiqdi va 1995-yilda Sun uning nomini **Java** ga almashtirdi, va uni WWW rivojlanishiga hizmat qilishi uchun ma'lum o'zgarishlar qilishdi.

Java 1990 yillarda ishlab chiqarila boshlangan bo'lsa ham, uning birinchi versiyasi(**Java 1.0**) 1996 yil ommaga taqdim etilgan. Undan so'ng keyingi versiyalar sekin-astalik bilan chiqa boshladi: **1998 yil - Java 2, 2004 yil - Java 5.0, 2006 yil - Java 6, 2011 yil - Java 7, 2014 yil - Java 8.**

Java **Obyektga Yo'naltirilgan Dasturlash**(OOP-object oriented programming, ООП) tili va u C++ ga ancha o'xshash. Eng ko'p yo'l qo'yildigan xatolarga sabab bo'luvchi qismalari olib tashlanib, Java dasturlash tili ancha soddalashtirildi.

Java texnologiyasi o'ta sodda, xavfsizlikni yuqori darajada ta'minlab bera oladigan, kuchli, to'la obyektga yo'naltirilgan dasturlash tili bo'lib, muhit (platforma)ga bo'liq bo'lmagan holda ishlaydi. U bilan xatto eng kichik qurilmalarga ham dasturlar yozish mumkin. Java texnologiyasi to'laligicha **Java Virtual Machine(JVM)** ga asoslangan. JVM ning vazifasi tarjimonlik ya'ni, dastlab biz yozgan ***.java** fayl kompilyator yordamida **bayt kod**ga o'giriladi va JVM yordamida esa mashina tiliga aylantiriladi. Bu degani JVM qaysi platformaga tegishli bo'lsa, kodlarni ham o'sha platformaga moslab beradi.

JAVA imkoniyatlar:

- WORA - Write Once, Run Anywhere (portable). Platforma tanlamaydi;
- havfsizlik (ishonch yuq kodni havfsiz ishga tushirish);
- hotirani havfsiz boshqarish (avtomat ravishda musorlarni yig’adi);
- tarmoq uchun dasturlar yozish ;
- ko’p oqimli (Multi-thread) dasturlash;

- dinamik & kengaytirish;

-Class lar alohida fayllarda saqlanadi. Kerak bo’lsa ishlatiladi. Dinamik ravishda imkoniyatini oshirish xam mumkin kerak bo’lsa.

Java texnologiyalari

Java SE (Java Standart Edition) - serverda, shaxsiy kompyuterda desktoplarda ishlovchi dasturlar, appletlar yaratish uchun ishlatiladi. Bu texnologiya yordamida yaratilgan dasturlar deyarli barcha operatsion tizimlarda ishlay oladi(**Windows NT, Macintosh,Linux va Solaris**). Shu bilan birga JavaSE boshqa Java turlarining asosi hisoblanadi.

Java EE (Java Enterprise Edition) - Java texnologiyalari orasida eng keng tarqalgan turi xisoblanib unda asosan serverda ishlovchi dasturlar yaratiladi, masalan ko'p foydalanuvchili web-saytlar yaratishda keng qo'llaniladi va asosan internetda ishlovchi dasturlarda qo'llaniladi. Java SE ni Java EE dan eng asosiy farqi Java EE o'z tarkibiga Java SE ni olibgina qolmay shu bilan birga ko'pgina boshqa qo'shimcha kutubxonalarni(odatda ***.jar)** ham o'z ichiga oladi ya'ni: **Servlet, JavaMail, JSF(Java Server Face)** va boshqa ko'pgina internetga asoslangan qoshimcha kutubxonalar.

Java ME (Java Micro Edition) - Java SE ning ba'zi qismlarini o'z ichiga oladi, JavaME yordamida kichik qurilmalar uchun dastrular yozish mumkin, masalan, mobil telefon uchun o'yinlar, dasturlar yaratish mumkin.

Javada kompilyator aytib o'tganimizdek biz yozgan kodni bayt-kodga o'giradi, odatda kompilatsiyadan o'tgan klasslar ***.class** qisqartirmasi bilan tugaydi va kompilatsiyadan o'tgan klassni Java Virtual Machine(JVM) ga yuklanadi va bayt-kodli fayllarni interpretatsiya qiladi, ya'ni mashina tiliga o'giradi va shu bilan birga undagi kodni imkoni boricha optimallashtiradi.

Java dasturlash tilida dastur tuzish uchun, dastlab, kompyuterga kerakli dasturlarni o‘rnatish lozim. Birinchidan, Java dasturlarni ishga tushirish uchun, bizga **Java-mashina** kerak bo‘ladi. Gap shundaki, barcha Java dasturlar faqat Java-mashina o‘rnatilgan kompyuterlarda ishlaydi. Java-mashina Java dastur uchun muhit hisoblanadi. Ikkinchidan, Java dasturlarni yozish uchun maxsus muhit**(IDE)** kerak bo‘ladi. Ikkala dasturni ham oraclening saytidan yuklab olishingiz mumkin. Yuklab olish uchun Oracle saytiga kiramiz va Java Platform(**JDK**)ni yuklab olamiz.

JDKni yuklab oladigan oynaga o‘tamiz va litsenziyaga rozi bo‘lamiz(**Accept License Agreement**). Undan so‘ng kompyuteringizga mos keladigan JDKni tanlaymiz, agar 32 bitlik tizim bo‘lsa, "**jdk-8u20-windows-i586.exe**"ni tanlaymiz va yuklashni boshlaymiz.

Product / File Description	File Size	Download
Linux x86	135.24 MB	jdk-8u20-linux-i586.rpm
Linux x86	154.87 MB	jdk-8u20-linux-i586.tar.gz
Linux x64	135.6 MB	jdk-8u20-linux-x64.rpm
Linux x64	153.42 MB	jdk-8u20-linux-x64.tar.gz
Mac OS X x64	209.11 MB	jdk-8u20-macosx-x64.dmg
Solaris SPARC 64-bit (SVR4 package)	137.02 MB	jdk-8u20-solaris-sparcv9.tar.Z
Solaris SPARC 64-bit	97.09 MB	jdk-8u20-solaris-sparcv9.tar.gz
Solaris x64 (SVR4 package)	137.16 MB	jdk-8u20-solaris-x64.tar.Z
Solaris x64	94.22 MB	jdk-8u20-solaris-x64.tar.gz
Windows x86	161.08 MB	jdk-8u20-windows-i586.exe
Windows x64	173.08 MB	jdk-8u20-windows-x64.exe

Yuklab olingandan so‘ng, dasturni ishga tushiramiz va berilgan savollarga qarab o‘rnatamiz(unchalik qiyiin ish emas va ko‘p vaqt ham kerak emas).

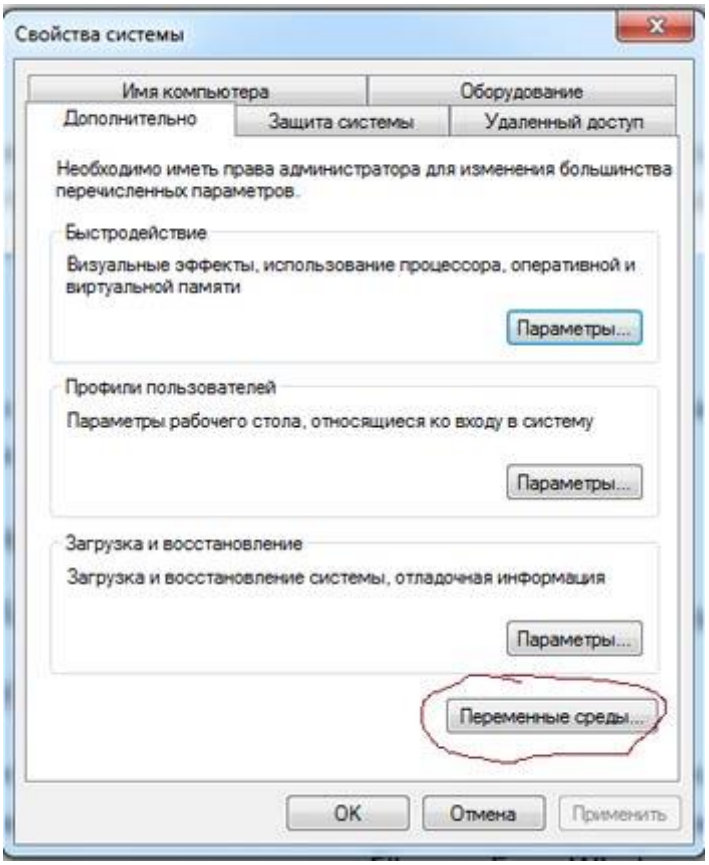
Odatda JDK "**C:\Program files\Java**" adresiga o‘rnatiladi

Keling endi, java bajaruvchi utilitlarini topamiz. Uning uchun quyidagi papkaga kiramiz:

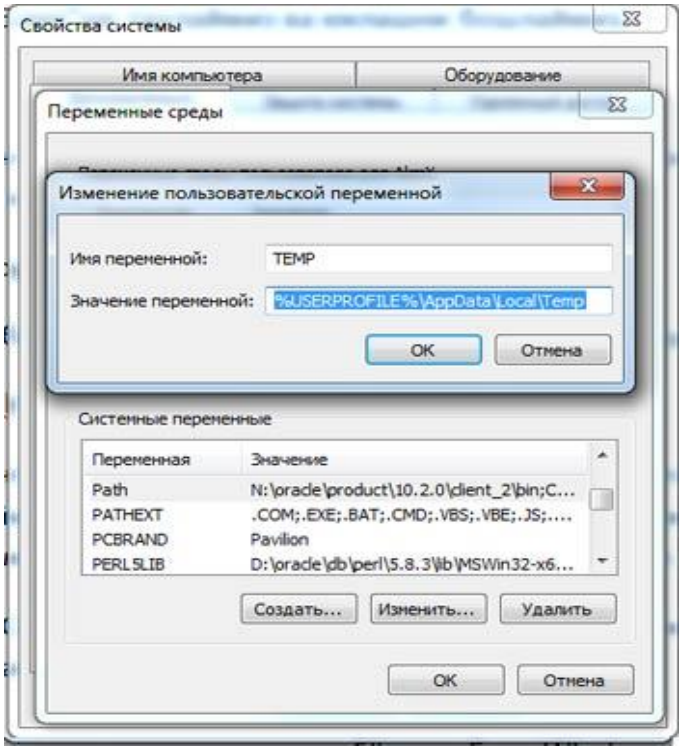
C:\Program files\jdk*\bin

Bu adresda JDKning barcha bajariluvchi fayllari joylashgan. Biz ularni, operatsion tizimga ham ma'lum qilib qo‘yishimiz lozim. Operatsion tizim bularni bilib olsa, bemalol "**Командная строка**" orqali ham ishlatishimiz mumkin bo‘ladi. Buni **Windows 7** misolida ko‘rsataman.

Мой компьютер->Свойства, chap tomonda "**Дополнительные параметры системы**" bo‘limiga kiramiz va quyidagi oynani ko‘ramiz.



Bu oynadan "**Переменные среды**" tugmasini bosamiz, hosil bo‘lgan oynaning "**Системные переменные**" bo‘limidan "PATH" o‘zgaruvchisini(переменная)qidirib, uni belgilaymiz va "**Изменить**" tugmasini bosamiz.



Shundan so‘ng, "**Значение переменной**"dagi qiymatlarning oxiriga o‘tamiz va "**C:\Program Files\Java\jdk*\bin**" adresini kiritamiz(***** o‘rniga o‘zingizning jdk adresingiz bo‘ladi, ya'ni mavjud papka nomi). "**OK**" tugmalarini bosib, bu oynalardan chiqib ketamiz va kompyuterni qayta yuklaymiz.

Hozircha shu, xulosa qiladigan bo‘lsak, biz bu maqolada, o‘zida Java kompilyatorni saqlaydigan, qaysiki biz yozgan Java kodlarni bayt kodga(kompyuter tushunadigan kodga) o‘tkazib beradigan, undan tashqari yozilgan kodlarni ishlatish uchun kerak bo‘ladigan Java-mashinani ham o‘zida mujassam etgan JDK(**Java Development Kit**)ni yuklashni, o‘rnatishni va operatsion tizimga o‘rnatilgan joyini e'lon qilishni ko‘rib chiqdik.

Navbat, Java dasturlash tilining asosi va uning strukturasiga keldi. Barcha narsaning asosini bilib olsangiz, har qanday murakkab holni ham tushunish mumkin bo‘ladi. Nafaqat dasturlash, balki istalgan yo‘nalish, soha yoki biror bir tushunchani mukammal bilish uchun, dastlab uning strukturasini(nimalardan tashkil topganini)bilish, o‘rganishning asosiy va to‘g‘ri harakati bo‘ladi

JAVA ning C & C++ dan ustunligi

- WORA - Write Once, Run Anywhere (portable).
- Havfsizlik (ishonch yuq kodni havfsiz ishga tushirish).
- Hotirani havfsiz boshqarish (avtomat ravishda musorlarni yig’adi)
- Tarmoqga dasturlash
- Ko’p oqimli (Multi-thread) dasturlash
- Dinamik & kengaytirish
- Class lar alohida fayllarda saqlanadi
- Kerak bo’lsa ishlatiladi
- Dinamik ravishda imkoniyatini oshirish xam mumkin kerak bo’lsa.

Quyidagi farqlar bilan Java C/C++ dan ajralib turadi

- header fayllar yo’q
- Preprocessor’lar yo’q
- Goto yo’q
- Unicode belgilar
- Avtomat musorlarni yig’adi
- Ko’rsatkich (pointer) yo’q
- Operatorlarni peregruzga qilish yo’q
- 100% OYDT – hamma narsa class
- Global o’zgaruvchi va funksiyalar yo’q

Java dasturlash tili James Gosling tomonidan yaratilgan. Java'ning birinchi nomi "Oak" bo'lgan. Birinchi ofitsialniy versiya - Java 1.0, 1995-96 yil taqdim qilingan. Java tilida yozilgan oddiy dasturning strukturasi va komentariya tushunchasi NetBeans IDE muhitida dastur yaratiladi.

```
1  class test {
2  public static void main(String[] args){
3  System.out.println("HellO WorlD");>
4  }
5  }
```

Java dasturlash tili registrga bog'liq bulgan dasturlash tili hisoblanadi. Agar biz dasturdagi "main" so'zini "mAin" deb yozsak. NetBeansning quyi qismida xatolik haqida ma'lumot chiqadi. Demak, so'zlarning katta-kichikligiga ahamiyat beriladi.

Ikkinchi qatordagi "public" kalit so'zi, ruxsatni anglatadi, ya'ni dasturni istalgan joyidan shu nomli klasga murojat qilish mumkin bo'ladi.

"class" kalit so"zi, bu degani dasturdagi hamma kodlar klas ichida joylashadi va bu klass "test" deb ataladi. Klass bu – dastur uchun konteyner hisoblanadi. Barcha Java dasturida kamida bitta klass mavjud bo'ladi, murakkab dasturlarda bittadan ham ko'p bo'lishi mumkin. Klass nomi dasturchi tomonidan quyidagi qoidalarga rioya qilingan holda beriladi.

Klas nomi harfdan boshlanishi kerak

Klas nomida faqat harf va sonlar ishtirok etishi mumkin

Uzunligi siz hohlagancha bulishi mumkin(kichikroq va tushunarli bulgani ma'qul)

Klas nomi sifatida maxsus zaxira so'zlari ishtirok etmasligi lozim

Odatda klas nomi katta harfdan iborat buladi(bizning holda bunday emas)

Agar bir nechta so'zdan iborat bo'lsa, ularning bosh harflari katta harflardan yozilishi (tuya stili) odat bo'lib qolgan (Test Variable)

Klas nomi shu klas saqlangan fayl nomi bilan bir xil bo'lishi kerak. Agar asosiyklas nomi "test"bo'lsa kod saqlangan fayl nomi ham "test" bo'lishi lozim. Shu bilan birga registr (katta kichik harf) ham bir xil bo'lishi shart. Fayl kengaytmasi ".java" bo'lishi kerak.

Agar dastur to'g'ri yozilgan va to'g'ri nomlangan bo'lsa, kompilyatsiyadan so'ng bayt kod hosil bo'ladi va u asosiy klas nomi kabi nomlanadi. Lekin kengaytmasi ".class" ya'ni "test.class" ko'rinishida bo'ladi.

Yozilgan kod "Javac" kompilyatori yordamida bayt-kodga aylantiriladi va "Java" interpreratoridan foydalanib, dastur ishga tushadi. Interprerator o'z ishini "main" metodidan boshlaydi shuning uchun har bir kodda bu metod bo'lishi lozim.

Koddagi figurali qavslar ({ }) alohida blokka olish uchun ishlatiladi. Barcha dasturlar alohida blok hisoblanadi. Shuning uchun klas nomidan keyin qavs ochiladi va oxirida yopiladi.

Dastur ichidagi alohida bloklar dastur metodlari hisoblanadi. Misolda “main” metodi dastur ichida joylashgan va qavs bilan ajratilgan. Bu qavslar metod boshlanishi va tugashini bildiradi.

Metod ichida ekranga chiqaruvchi buyruq (System.out.println) berilgan, bu operator deyiladi. Bu Dasturda operatorlar soni bitta va oxirida nuqta-vergul (;) bilan tugatilmoqda.

Java dasturlash tilida boshqa tillarda bo’lgan singari komentariyalar mavjud. Kommentariyalar kompilyator tomonidan inobatga olinmaydi ulardan dasturchilar o’z kodlarini tushintirishda foydalanishadi. Kommentariyadan foydalanilgan kodlarni , keyinchalik ochib ko’rganda, nima vazifa bajarilganini tez anglab olish mumkin. Komentariyaning quyidagi turlari mavjud:

Bir qatorli komentariyalar (//). Faqat bir qatorni kommentariyaga oladi, misol

```
1  class test {  //bu yerda klass e'lon qilinmoqda.
2  public static void main(String[] args){
3  System.out.println("HellO WorlD");
4  }
5  }
```

Berilgan izoh kompilyator tomonidan qaralmaydi, shuning uchun xatolik bo’lmaydi.

Ko’p qatorli kommentariya. “ /* ” belgilar bilan boshlanib “ */ ” belgilar bilan tugaydigan kommentariya turi. Bunda, shu blok orasidagi barcha yozuv kommentariyaga o’tadi. Misol,

```
1  class test {
2  /* public static void main(String[] args){
3  System.out.println("HellO WorlD");
4  }   */
5  }
```

Kompilyator klas ichidagi barcha kodlarni inobatga olmaydi.

2.2 Malumotlar bazasi

Oracle (**Ma’lumotlar Bazasini Boshqarish Tizimi**) – katta hajmdagi ma’lumotlarni boshqarish, ulardan kerakli ma’lumotlarni so’rov orqali istalgan ko’rinishda chiqarib olish, ma’lumotlarning zahira nusxalarini olish, katta xajmdagi ma’lumotlarni siqish, qulay interfeysda baza ustidan nazorat o’rnatish, ma’lumotlar asosida hisobotlar hosil qilish va bulardan boshqa ma’lumotlar ustida juda katta ko’lamdagi ishlarni amalga oshiradigan dasturiy kompleksdir. Oracle dasturini server va klient ko’rinishida o’rnatish mumkin va berilgan ruxsat doirasida ishlatish mumkin. Bu dastur asosan katta xajmdagi ma’lumotlar bilin

ishlaganligi uchun , asosan yirik korxonalarda ishlatiladi. Bu dasturning asosini ma’lumotlar bazasi tushunchasi tashkil etadi.

Ma’lumotlar bazasi – bu serverda joylashgan bir yoki bir necha fayllardan tashkil topgan, shu serverga yig’iladigan va so’rovlar orqali nazorat qilib boriladigan ma’lumotlardir. Ma’lumotlar bazasi mantiqiy va jismoniy ko’rinishda bo’lishi mumkin. Mantiqiy ko’rinishdagi ma'lumotlar bazasining asosini jadvallar tashkil etadi. Jadvallar ustun va qatorlardan tashkil topgan bo’lib, ular birlashgan joy(yacheyka) da ma’lumotlarni saqlaydi. Bu ko’rinishdagi ma’lumotlar bazasi relyatsion ma’lumotlar bazasi deyiladi. Baza eng kamida jadvaldan tashkil topgan bo’lishi shart, bu shart ma’lumotlar bazasi mavjud bo’lishning eng minimum shartidir

Bazada saqlanayotgan ma’lumotlarni xafsizligini saqlash maqsadida Oracle(MBBT) da juda ko’p ishlar amalga oshirilgan, biz ularni keyingi maqolalarda ko’ramiz. Ma’lumotlar bazasini tashkil etgan fayllarni: ma’lumotlar bazasi fayllari va ma’lumotlar bazasiga tegishli bo’lmagan fayllar ko’rinishida ajratishimiz mumkin. Ma’lumotlar bazasi fayllarida ma’lumotlar saqlanadi, ma'lumotlar bazasiga tegishli bo’lmagan fayllarda har xil protokollar, sozlashlar kabi qo’shimcha ma’lumotlar saqlanadi. Bu ma’lumotlar bilan Oracle administratorlari ruxsat bergan foydalanuvchilargina ishlay oladi

Oracle ning juda ko’p utilitlari (Rman, Oracle Data Guard, Oracle Data Grid) mavjud bo’lib, ular ham ma’lumotlarni foydalanuvchi uchun qulay ko’rinishda taqdim etish(boshqarish, nazorat qilish) uchun ishlatiladi. Misol tariqasida Rman utilitasini oladigan bo’lsak, bu utilita bazani to’liq yoki qisman zahira nusxalarini juda katta xajmga kamaytirib(siqib) hosil qiladi va saqlash uchun o’zi chunarli bo’lgan kodlarga aylantiradi. Bazaga shikast etganda shu zahira nusha orqali bazani qayta tiklash mumkin bo’ladi.

Oracle SQL kodlari orqali buyruqlarni qabul qiladi. Bu so’rov tili ma’lumotlar bazasini yuklash, uni to’xtatish, montirovka qilish, jadvallar yaratish, o’chirish, o’zgartirish, ma’lumotlar ichidan kerakligini chiqarib olish va boshqa vazifalar uchun ishlatiladi. Bu til juda ko’p **Ma’lumotlar Bazasini Boshqarish Tizim** lari uchun umumiy hisoblanadi. SQL kodlari bir yoki bir necha jadvallar ustida so’rovlarni amalga oshira oladi

Ma’lumotlarni boshqarishda foydalanuvchilarga qulaylik yaratish maqsadida Oracle dasturi yaratuvchilari **Oracle Enterprise Manager** deb nomlangan web sahifa yaratishgan bo’lib, bu sahifa orqali butun Oracle ni boshqarish mumkin bo’ladi. SQL kodlarini bilmaydigan foydalanuvchilar ham bu web sahifa orqali barcha vazifalarni bajarishi mumkin, faqatgina kerakli **“silka”** larni bosish kifoya. Har bir ma’lumotlar bazasi uchun alohida-alohida Enterprise Manager sahifasi

bo’ladi, har bir sahifa portlar orqali ajratiladi. Barcha brauzerlarda bu sahifa yaxshi namoyon bo’ladi va bazani xafsizligiga portlarni boshqarish yo’li bilan erishish mumkindir.

2.3 Java Swing

JAVA uchun GUI Framework

• JAVA dasturlarini “look and feel” holatiga keltirish

• Java Foundation Classes (Sun Microsystems) bir qismi

• IFC (Netscape) va JFC (Sun Microsystems) qo’shilgani

• Java Standard Edition 1.2 versiyasidan boshlab paket shaklida qo’shilgan

• GUI controllar java dastur orqali generatsiya qilinadi

• Ko’rinishi va funksionallkin jihatidan Windows, Mac va Linux OS’laridaka

Java Swing Component’larini o’zgartirish uchun dasturlar

Etima, Jvider, Jgo, Visual Java (**SWING) Components**

Library, GUI Commands

Software Development Environments (SDE) for Eclipse,

Netbeans, SunOne, Jbuilder

Raqobatchi Java texnologiyalar

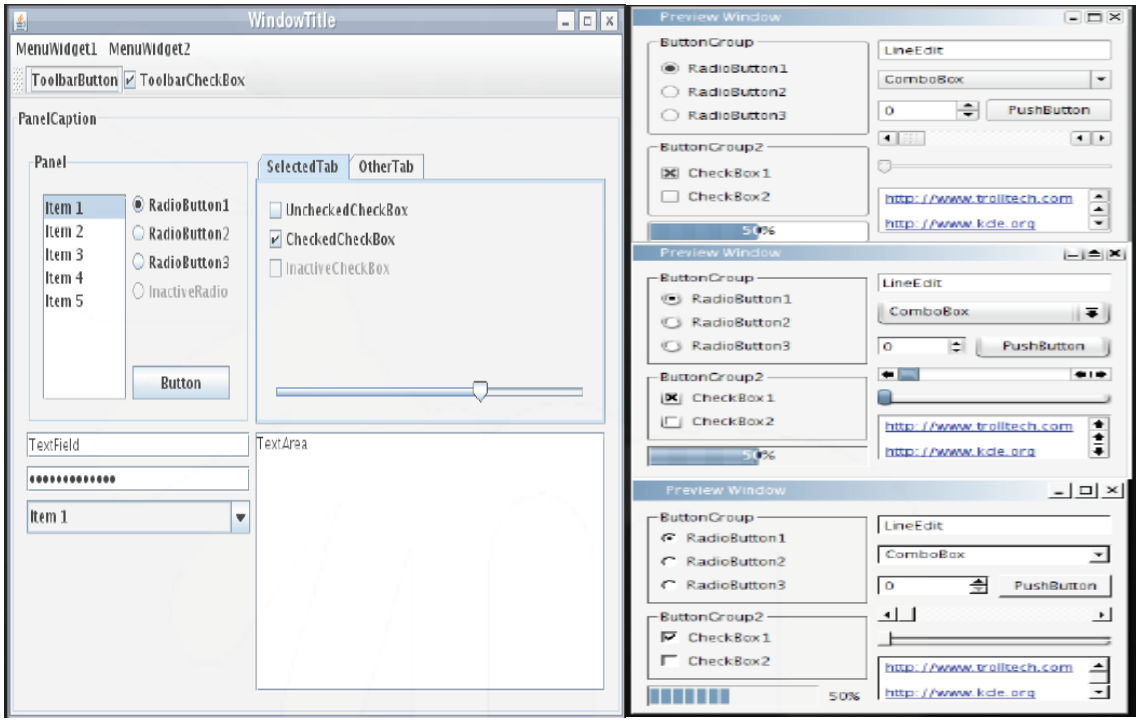
Standard Widget Toolkit, SWT, open source widget

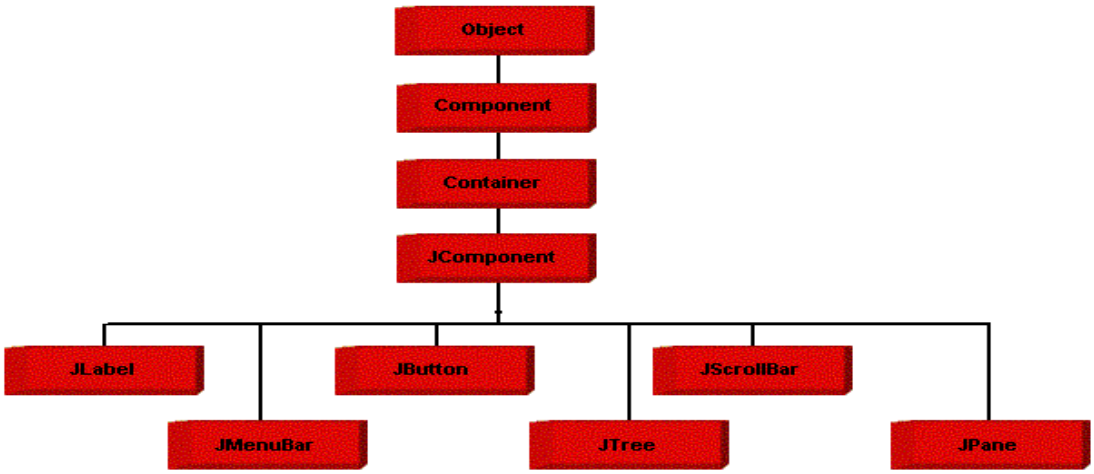
Toolkit Eclipse uchun

http://www.eclipse.org/swt/

Abstract Windows Toolkit, AWT, Java’ning original platforma widget toolkit.

http://java.sun.com/products/jfc/download.html



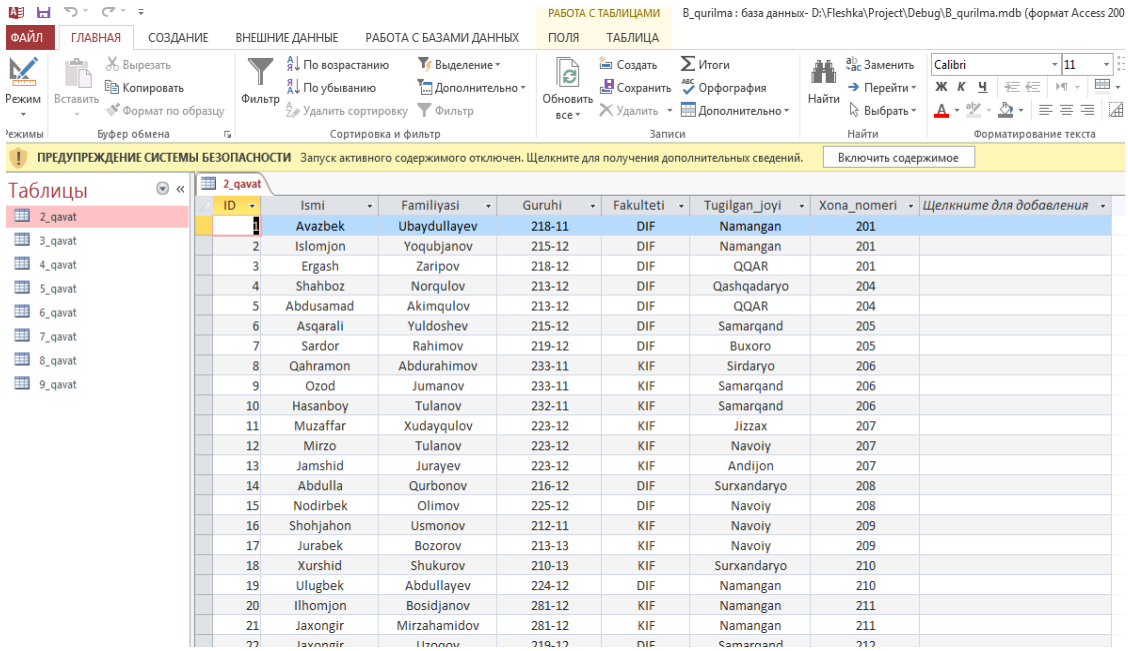



```
import javax.swing.JFrame;
import javax.swing.JLabel;
public class HelloWorldFrame extends JFrame {
public static void main(String args[]) {
new HelloWorldFrame();  }
HelloWorldFrame() {
JLabel jlbHelloWorld = new JLabel("Hello World");
add(jlbHelloWorld);
this.setSize(100, 100);
setVisible(true);}
}
import javax.swing.*;
public class SW
public static void main(String[] args) {
createAndShowGUI();}
private static void createAndShowGUI() {
JFrame frame = new JFrame("Hi..");
frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
JLabel label = new JLabel("Hello World");
frame.getContentPane().add(label);
frame.pack();
frame.setVisible(true);
```

3. Amaliy qism

3.1.Malumot bazasi tuzilmasi.

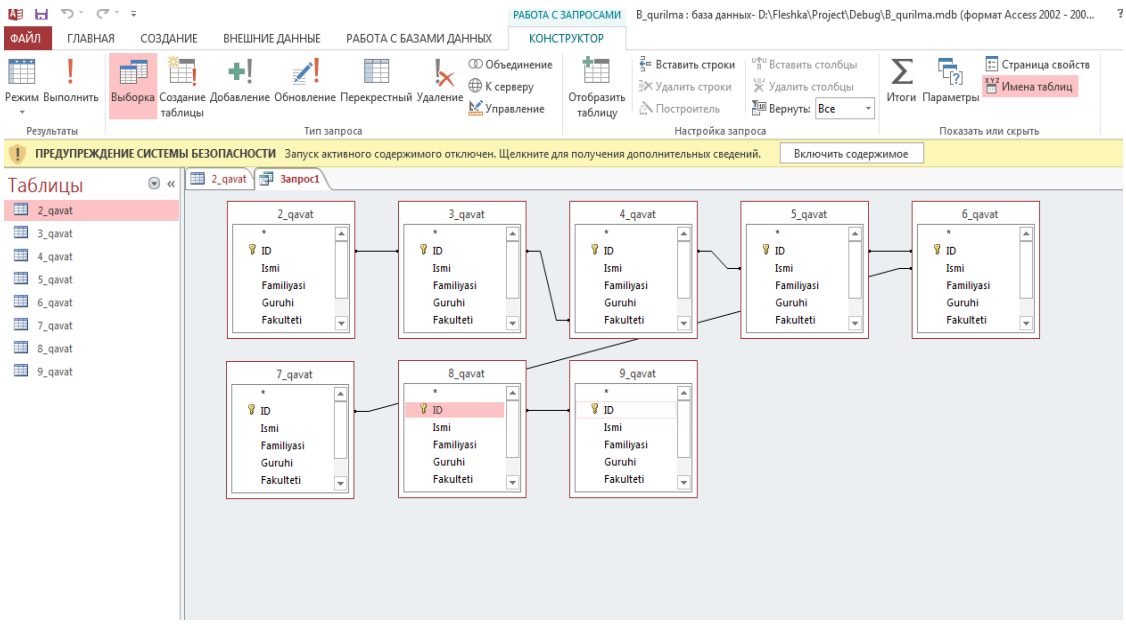
Microsoft Access da tayyorlangan.



ID	Ismi	Familiyasi	Guruhi	Fakulteti	Tugilgan_joyi	Xona_nomeri
1	Avazbek	Ubaydullayev	218-11	DIF	Namangan	201
2	Islomjon	Yoqubjanov	215-12	DIF	Namangan	201
3	Ergash	Zaripov	218-12	DIF	QQAR	201
4	Shahboz	Norqulov	213-12	DIF	Qashqadaryo	204
5	Abdusamad	Akimqulov	213-12	DIF	QQAR	204
6	Asqarali	Yuldoshev	215-12	DIF	Samarqand	205
7	Sardor	Rahimov	219-12	DIF	Buxoro	205
8	Qahramon	Abdurahimov	233-11	KIF	Sirdaryo	206
9	Ozod	Jumanov	233-11	KIF	Samarqand	206
10	Hasanboy	Tulanov	232-11	KIF	Samarqand	206
11	Muzaffar	Xudayqulov	223-12	KIF	Jizzax	207
12	Mirzo	Tulanov	223-12	KIF	Navoiy	207
13	Jamshid	Jurayev	223-12	KIF	Andijon	207
14	Abdulla	Qurbonov	216-12	DIF	Surxandaryo	208
15	Nodirbek	Olimov	225-12	DIF	Navoiy	208
16	Shohjahon	Usmonov	212-11	KIF	Navoiy	209
17	Jurabek	Bozorov	213-13	KIF	Navoiy	209
18	Xurshid	Shukurov	210-13	KIF	Surxandaryo	210
19	Ulugbek	Abdullayev	224-12	DIF	Namangan	210
20	Ilhomjon	Bosidjanov	281-12	KIF	Namangan	211
21	Jaxongir	Mirzahamidov	281-12	KIF	Namangan	211

3.2. UML sxemasi.

UML - bu yangi Unifikatsiyalangan modellashtirish tili (Unified Modeling Language) bo'lib, Gradi Buch, Ayvar Yakobson va Djeyms Rambo (Grady Booch, Ivar Jacobson, James Rumbaugh) tomonidan ob'ektga-yo'naltirilgan loyihalash va taxlilni xujjatlashning yangi standarti sifatida taklif qilingan.



3.3 Dasturdan foydalanish

“Tizimli dasturiy taminot ” axborot tizimi ishga tushurish uchun uchun siz avval tuzulgan dasturning tayyor oynasiga kirasiz va siz u yerdan o’zizga kerakli bugan oynaga o’tish uchun shu oyna tugmasini bosasiz. Dasturning birinchi ounasi quydagi korinishda

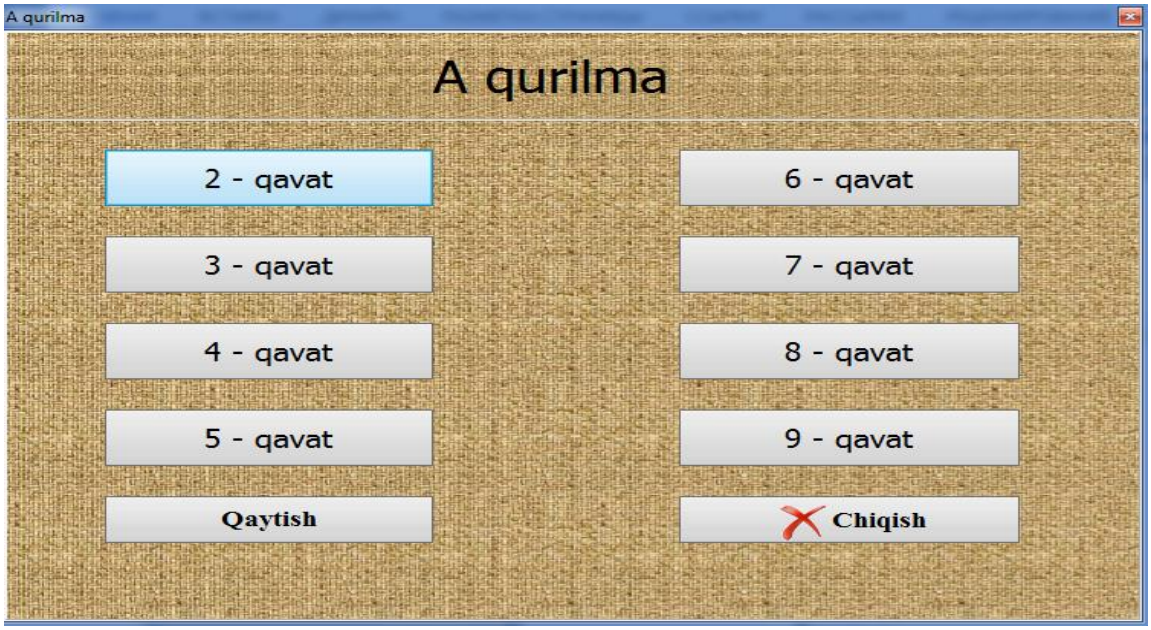
Bu dasturni Admin va Foydalanuvchi tomonidan ishga tushurish mumkin siz agar admin sifatida dasturga kirsangiz siz Login va Parolni bilishingiz va shu login va parolni terib kirishingiz kerak buladi parol va login quydagi joyga teriladi.

Parol va loginni terib kirganizdan keyin sizda ushbu oyna yaniy Asosiy oyna ishga tushadi.

Asosiy oyna quydagi ko’rinishda bo’ladi.

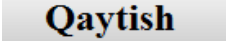
Bu oyna to’rtta tugmadan iborat bo’lib siz bu yerdan ushbu tugmalar yordamida siz Talabalar turar joyining binolariga kirishingiz mumkin

A qurilma tugmasini bosganizda sizga ushbu oynani ochib beradi.



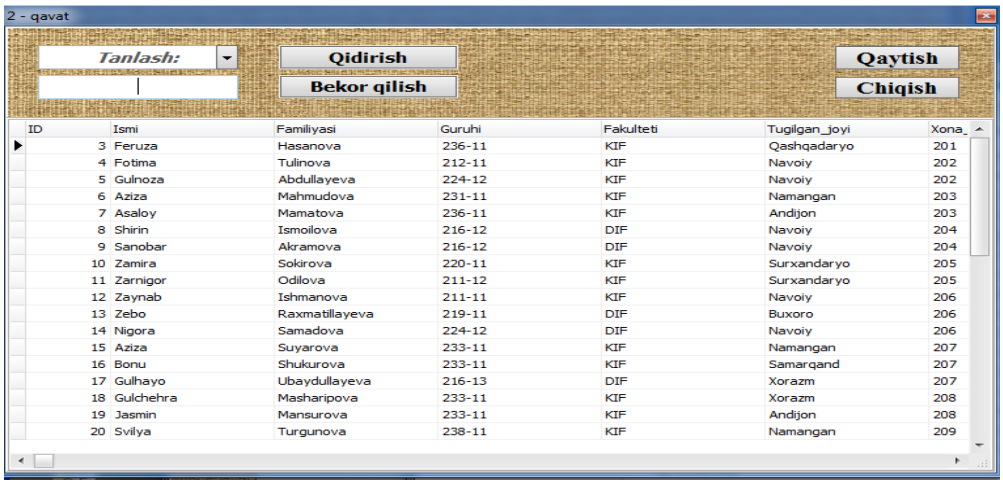
Siz bu oynada o’zizga kerakli bo’lgan qavatlar bilan tanishib chqishingiz mumkin.

Oynadan qaytish uchun 

yoki 

tugmasini bosishingiz kerak buladi.

Qavatlardan biri tugmasini bosganizda sizga ushbu oynani ochib beradi.

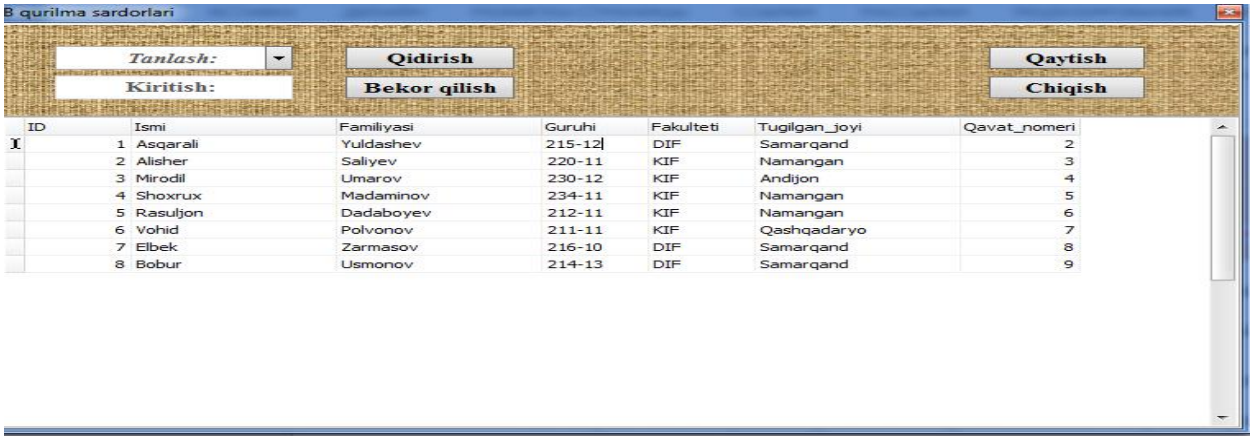


ID	Ismi	Familiyasi	Guruhi	Fakulteti	Tugilgan_joyi	Xona_
3	Feruza	Hasanova	236-11	KIF	Qashqadaryo	201
4	Fotima	Tulinova	212-11	KIF	Navoiy	202
5	Gulnoza	Abdullayeva	224-12	KIF	Navoiy	202
6	Aziza	Mahmudova	231-11	KIF	Namangan	203
7	Asaloy	Mamatova	236-11	KIF	Andijon	203
8	Shirin	Ismoilova	216-12	DIF	Navoiy	204
9	Sanobar	Akramova	216-12	DIF	Navoiy	204
10	Zamira	Sokirova	220-11	KIF	Surxandaryo	205
11	Zarnigor	Odilova	211-12	KIF	Surxandaryo	205
12	Zaynab	Ishmanova	211-11	KIF	Navoiy	206
13	Zebo	Raxmatillayeva	219-11	DIF	Buxoro	206
14	Nigora	Samadova	224-12	DIF	Navoiy	206
15	Aziza	Suyarova	233-11	KIF	Namangan	207
16	Bonu	Shukurova	233-11	KIF	Samarqand	207
17	Gulhayo	Ubaydullayeva	216-13	DIF	Xorazm	207
18	Gulchehra	Masharipova	233-11	KIF	Xorazm	208
19	Jasmin	Mansurova	233-11	KIF	Andijon	208
20	Svilya	Turgunova	238-11	KIF	Namangan	209

Siz bu oynada o’zizga kerakli bo’lgan xonalar bilan tanishib chqishingiz mumkin.

Sardorlar tugmasini bosganizda sizga ushbu oynani ochib beradi.

Siz bu oynada o’zizga kerakli bo’lgan bino sardorlari bilan tanishib chqishingiz mumkin.
B bino sardorlari ro’yhati

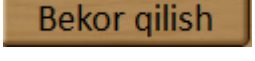


ID	Ismi	Familiyasi	Guruhi	Fakulteti	Tugilgan_joyi	Qavat_nomeri
1	Asqarali	Yuldashev	215-12	DIF	Samarqand	2
2	Alisher	Saliyev	220-11	KIF	Namangan	3
3	Mirodil	Umarov	230-12	KIF	Andijon	4
4	Shoxrux	Madaminov	234-11	KIF	Namangan	5
5	Rasuljon	Dadaboyev	212-11	KIF	Namangan	6
6	Vohid	Polvonov	211-11	KIF	Qashqadaryo	7
7	Elbek	Zarmasov	216-10	DIF	Samarqand	8
8	Bobur	Usmonov	214-13	DIF	Samarqand	9

Siz jadvalga yangi talaba qo’shmoqchi bo’lsangiz uni malumotlarini kiritasiz kiritish quydagicha buladi siz avval 

tugmasini bosib malumot qo’shish oynasiga o’tasiz va malumotlarni kiritasiz qoshiladi

Malumotlarni to’liq kiritib bo’ganizdan keyin 

tugmasini bosib chiqasiz agar bu malubot bor bo’lsa yoki noto’gri kiritib qo’ysangiz 

tugmasini bosib qaytadan kiritasiz .

Dasturni ishga tushurish shulardan iborat

Xulosa

Men bu kurs ishini Java dasturlash tilidan foydalanib yaratdim. Bu dastur Talabalar turar joyini(TTJ) avtomatlashtiradi. Men bu kurs ishini Java dasturlash tili binary fayllardan foydalanib yaratdim. Bu dasturim avtomatlashtirilgan TTJ deb ataladi bu dasturda bu dasturda talabalar haqida ma'lumotlarni tez va oson toppish va kiritish tizimlari avtomatlashtirilgan.Biz bu dasturni tuzishdan maqsad TTJ ishini tez va yuqori sifatli xizmat ko'rsatish va kam vaqt qulay imkoniyatlarni berishi uchundir. TTJda bu dasturdan foydalanilsa kam ishchi kuchi va tezlikni oshirishga xizma qiladi .Men bu kurs ishini bajarish davomida Java dasturida o`zimga ozgina bo'lsa ham tushuncha oldim.

Xulosa qilib shuni aytishim mumkinki, kurs ishini bajarish davomida Java dasturlash tilii bilan yaqindan tanishdim. O'rgangan narsalarim keyingi o'qish va ish faoliyatimda kerak bo'ladi deb o'ylayman. Kurs ishini bajarish bilan cheklanib qolmay, Javani imkoniyatlarini yana chuqurroq o'rganishlikka xarakat qilaman.

Hozirgi kunda O`zbekistonda Informatsion Texnologiyalar va Axborot Texnologiyalarini rivojlantirish yo`lida bir talay ishlar amalga oshirilmoqda. Buni birgina bu sohada ishlab chiqilgan qaror, qonun va farmonlar misolida ham ko`rishimiz mumkin. Bizga "Informatika" fani o`tilayotgani ham bunga misoldir. Men bu kurs ishini bajarib ko`pgina bilimlarni o`rgandim. Bu dastur ishini bajaradigan dasturlar ko`p. Lekin bu dastur juda ahamiyatli. Xulosa qilib shuni aytish mumkinki kurs ishini bajarish davomida bir qator bilimlar egallandi va Javada bazaga ulash va u bilan amallar bajarish haqida ma`lumotga ega bo`ldim. Bu kurs ishini bajarish davomida men juda katta bilim va ko'nikmalarga ega bo'ldim. Bu olgan bilim va ko'nikmalarim kelajakda o'z kasbimning ustasi bo'lishimda yordam berishiga ishonchim komil

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4. O’zbekiston Respublikasi Vazirlar Mahkamasining 2002 yil 6-iyundagi “Kompyuterlashtirishni yanada rivojlantirish va axborot kommunikatsiya texnologiyalarini joriy qilish chora tadbirlari to’grisida”gi 200-sonli qarori.
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10. **Nicholas C. Zakas,** Professional JavaScript for Web Developers 2012.
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12. www.etuit.uz
13. www.edu.uz
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15. http://www.intuit.ru/
16. Va boshqa adabiyotlar…

ILOVA

Dasturini kodi:

```
//import the packages for using the classes in them into the program
import javax.swing.*;
import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;

/**
 * A public class
 */
public class AddBooks extends JInternalFrame {

   /**
    *
********************************************
*****************************
    * **      declaration of the private variables used in the program       ***
    *
********************************************
*******************************
    */
   //for creating the North Panel
   private JPanel northPanel = new JPanel();
   //for creaing the North Label
   private JLabel northLabel = new JLabel("BOOK INFORMATION");

   //for creating the Center Panel
   private JPanel centerPanel = new JPanel();
   //for creating an Internal Panel in the center panel
   private JPanel informationLabelPanel = new JPanel();

   //for creating an array of JLabel
   private JLabel[] informationLabel = new JLabel[10];
   private JLabel lblShelfNo = new JLabel(" Shelf No");
   private JTextField txtShelfNo = new JTextField();
   //for creating an array of String
   private String[] informationString = {
         " The book subject: ", " The book title: ",
         " The name of the Author(s): ", " The name of the Publisher: ",
         " Copyright for the book: ", " The edition number: ", " The number of Pages: ",
         " ISBN for the book: ", " The number of copies: ", " The name of the Library: "
   };
   //for creating an Internal Panel in the center panel
   private JPanel informationTextFieldPanel = new JPanel();
   //for creating an array of JTextField
   private JTextField[] informationTextField = new JTextField[10];

   //for creating an Internal Panel in the center panel
   private JPanel insertInformationButtonPanel = new JPanel();
   //for creating a button
   private JButton insertInformationButton = new JButton("Insert the Information");

   //for creating South Panel
   private JPanel southPanel = new JPanel();
   //for creating a button
   private JButton OKButton = new JButton("Exit");

   //create objects from another classes for using them in the ActionListener
   private Books book;
   //for creating an array of string to store the data
   private String[] data;
   //for setting availble option to true
   private boolean availble = true;

   //for checking the information from the text field
   public boolean isCorrect() {
      data = new String[10];
      for (int i = 0; i < informationLabel.length; i++) {
         if (!informationTextField[i].getText().equals("")) {
            data[i] = informationTextField[i].getText();
         } else {
            return false;
         }
      }
      return true;
   }

   //for setting the array of JTextField to empty
   public void clearTextField() {
      for (int i = 0; i < informationTextField.length; i++) {
         informationTextField[i].setText(null);
      }
      txtShelfNo.setText(null);
   }
```

```
   //constructor of addBooks
   public AddBooks() {
      //for setting the title for the internal frame
      super("Add Books", false, true, false, true);
      //for setting the icon
      setFrameIcon(new
ImageIcon(ClassLoader.getSystemResource("ima
ges/Add16.gif")));
      //for getting the graphical user interface
components display area
      Container cp = getContentPane();

      //for setting the layout
      northPanel.setLayout(new
FlowLayout(FlowLayout.CENTER));
      //for setting the font for the North Panel
      northLabel.setFont(new Font("Tahoma",
Font.BOLD, 14));
      //for adding the label in the North Panel
      northPanel.add(northLabel);
      //for adding the north panel to the container
      cp.add("North", northPanel);

      //for setting the layout
      centerPanel.setLayout(new BorderLayout());
      //for setting the border to the panel

centerPanel.setBorder(BorderFactory.createTitle
dBorder("Add a new book:"));
      //for setting the layout
      informationLabelPanel.setLayout(new
GridLayout(11, 1, 1, 1));

/*****************************************
*****************************
       * for adding the strings to the labels, for
setting the font                *
       * and adding these labels to the panel.

*
       * finally adding the panel to the container
                                                *

*****************************************
*****************************/
      for (int i = 0; i < informationLabel.length;
i++) {

informationLabelPanel.add(informationLabel[i] =
new JLabel(informationString[i]));
         informationLabel[i].setFont(new
Font("Tahoma", Font.BOLD, 11));
      }
      centerPanel.add("West",
informationLabelPanel);

      //for setting the layout
      informationTextFieldPanel.setLayout(new
GridLayout(11, 1, 1, 1));

/*****************************************
*****************************
       * for adding the strings to the labels, for
setting the font                *
       * and adding these labels to the panel.

*
       * finally adding the panel to the container
                                                *

*****************************************
*****************************/
      for (int i = 0; i < informationTextField.length;
i++) {

informationTextFieldPanel.add(informationTextF
ield[i] = new JTextField(25));
         informationTextField[i].setFont(new
Font("Tahoma", Font.PLAIN, 11));
      }
      lblShelfNo.setFont(new Font("Tahoma",
Font.BOLD, 11));
      informationLabelPanel.add(lblShelfNo);
      txtShelfNo.setFont(new Font("Tahoma",
Font.PLAIN, 11));
      informationTextFieldPanel.add(txtShelfNo);
      centerPanel.add("East",
informationTextFieldPanel);


/*****************************************
*****************************
       * for setting the layout for the panel,setting
the font for the button*
       * and adding the button to the panel.

            *
       * finally adding the panel to the container
                                                *

*****************************************
*****************************/
      insertInformationButtonPanel.setLayout(new
FlowLayout(FlowLayout.RIGHT));
      insertInformationButton.setFont(new
Font("Tahoma", Font.BOLD, 11));

insertInformationButtonPanel.add(insertInformat
ionButton);
      centerPanel.add("South",
insertInformationButtonPanel);
      cp.add("Center", centerPanel);


/*****************************************
*****************************
       * for setting the layout for the panel,setting
the font for the button*
       * adding the button to the panel & setting the
border.                                 *
```

```
 * finally adding the panel to the container
                                        *
********************************************
****************************/
 southPanel.setLayout(new
FlowLayout(FlowLayout.RIGHT));
 OKButton.setFont(new Font("Tahoma",
Font.BOLD, 11));
 southPanel.add(OKButton);

southPanel.setBorder(BorderFactory.createEtche
dBorder());
 cp.add("South", southPanel);


/*******************************************
*****************************
 * for adding the action listener to the
button,first the text will be *
 * taken from the JTextField[] and make the
connection for database,   *
 * after that update the table in the database
with the new value      *

********************************************
****************************/

insertInformationButton.addActionListener(new
ActionListener() {

  public void actionPerformed(ActionEvent
ae) {

   //for checking if there is a missing
information
   if (isCorrect()) {
    Thread runner = new Thread() {

     public void run() {
      book = new Books();
      //for checking if there is no double
information in the database
      book.connection("SELECT
BookID FROM Books WHERE ISBN = '" +
data[7] + "'");
      String ISBN = book.getISBN();
      if
(!data[7].equalsIgnoreCase(ISBN)) {
       try {
        String sql = "INSERT INTO
Books
(Subject,Title,Author,Publisher,Copyright," +

"Edition,Pages,ISBN,NumberOfBooks,NumberOf
AvailbleBooks,Library,Availble,ShelfNo)
VALUES " +
                        "
(?,?,?,?,?,?,?,?,?,?,?,?,?)";

Class.forName("sun.jdbc.odbc.JdbcOdbcDriver")
;
        Connection con =
DriverManager.getConnection("jdbc:odbc:Driver
={Microsoft Access Driver
(*.mdb)};DBQ=JLibrary.mdb;DriverID=22;REA
DONLY=true) ", "", "");
//                   Connection
con=DriverManager.getConnection("jdbc:odbc:J
Library");
        PreparedStatement ps =
con.prepareStatement(sql);
        ps.setString(1, data[0]);
        ps.setString(2, data[1]);
        ps.setString(3, data[2]);
        ps.setString(4, data[3]);
        ps.setInt(5,
Integer.parseInt(data[4]));
        ps.setInt(6,
Integer.parseInt(data[5]));
        ps.setInt(7,
Integer.parseInt(data[6]));
        ps.setString(8, data[7]);
        ps.setInt(9,
Integer.parseInt(data[8]));
        ps.setInt(10,
Integer.parseInt(data[8]));
        ps.setString(11, data[9]);
        ps.setBoolean(12, availble);
        ps.setInt(13,
Integer.parseInt(txtShelfNo.getText()));
        ps.executeUpdate();
       } catch (Exception ex) {

JOptionPane.showMessageDialog(null,
ex.toString());
       }

       /*String sql="INSERT INTO
Books
(Subject,Title,Author,Publisher,Copyright," +

"Edition,Pages,ISBN,NumberOfBooks,NumberOf
AvailbleBooks,Library,Availble,ShelfNo)
VALUES ('" +
         data[0] + "','" + data[1] +
"','" + data[2] + "','" +
         data[3] + "', " + data[4] +
", " + data[5] + ", " +
         data[6] + ", '" + data[7] +
"', " + data[8] + "," + data[8] + ",'" +
         data[9] + "', " + availble +
", '" + txtShelfNo.getText() + "')";
       book.update(sql);*/

//JOptionPane.showMessageDialog(null, sql);
       //for setting the array of
JTextField to empty
       clearTextField();
      } else {
```

```
JOptionPane.showMessageDialog(null, "The book is in the library", "Error", JOptionPane.ERROR_MESSAGE);
                    }
                }
            };
            runner.start();
        } //if there is a missing data, then display Message Dialog
        else {

JOptionPane.showMessageDialog(null, "Please, complete the information", "Warning", JOptionPane.WARNING_MESSAGE);
        }
      }
    });
    //for adding the action listener for the button to dispose the frame
    OKButton.addActionListener(new ActionListener() {

      public void actionPerformed(ActionEvent ae) {
        dispose();
      }
    });
    //for setting the visible to true
    setVisible(true);
    //show the internal frame
    pack();
  }
}

//import the packages for using the classes in them into the program

import javax.swing.*;
import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.util.Date;

/**
 *A public class
 */
public class AddMembers extends JInternalFrame
{
        /*************************************
*****************************************
         ***     declaration of the private variables used in the program      ***

*****************************************
*********************************/

        //for creating the North Panel
        private JPanel northPanel = new JPanel();
        //for creaing the North Label
        private JLabel northLabel = new JLabel("MEMBER INFORMATION");

        //for creating the Center Panel
        private JPanel centerPanel = new JPanel();
        //for creating an Internal Panel in the center panel
        private JPanel informationLabelPanel = new JPanel();
        //for creating an array of JLabel
        private JLabel[] informationLabel = new JLabel[7];
        //for creating an array of String
        private String[] informaionString = {" Member ID: ", " The Password: ", " Rewrite the password: ",
                                             " The Name: ", " E-MAIL: ", " Major Branch:", " Expired: "};
        //for creating an Internal Panel in the center panel
        private JPanel informationTextFieldPanel = new JPanel();
        //for creating an array of JTextField
        private JTextField[] informationTextField = new JTextField[5];
        //for creating an array of JPasswordField
        private JPasswordField[] informationPasswordField = new JPasswordField[2];

        //for creating an Internal Panel in the center panel
        private JPanel insertInformationButtonPanel = new JPanel();
        //for creating a button
        private JButton insertInformationButton = new JButton("Insert the Information");

        //for creating the South Panel
        private JPanel southPanel = new JPanel();
        //for creating a button
        private JButton OKButton = new JButton("Exit");

        //create objects from another classes for using them in the ActionListener
        private Members member;
        //for creating an array of string to store the data
        private String[] data;

        //for checking the password
        public boolean isPasswordCorrect() {
                if (informationPasswordField[0].getText().equals(informationPasswordField[1].getText()))
                        data[1] = informationPasswordField[1].getText();
```

```
                else if
(!informationPasswordField[0].getText().equals(in
formationPasswordField[1].getText()))
                        return false;

                return true;
        }

        //for checking the information from the
text field
        public boolean isCorrect() {
                data = new String[6];
                for (int i = 0; i <
informationLabel.length; i++) {
                        if (i == 0) {
                                if
(!informationTextField[i].getText().equals("")) {
                                        data[i] =
informationTextField[i].getText();
                                }
                                else
                                        return
false;
                        }
                        if (i == 1 || i == 2) {
                                if
(informationPasswordField[i -
1].getText().equals(""))
                                        return
false;
                        }
                        if (i == 3 || i == 4 || i == 5
|| i == 6) {
                                if
(!informationTextField[i - 2].getText().equals(""))
{
                                        data[i -
1] = informationTextField[i - 2].getText();
                                }
                                else
                                        return
false;
                        }
                }
                return true;
        }

        //for setting the array of JTextField &
JPasswordField to null
        public void clearTextField() {
                for (int i = 0; i <
informationLabel.length; i++) {
                        if (i == 0)

        informationTextField[i].setText(null);
                        if (i == 1 || i == 2)

        informationPasswordField[i -
1].setText(null);
                        if (i == 3 || i == 4 || i == 5
|| i == 6)
        informationTextField[i - 2].setText(null);
                }
        }

        //constructor of addMembers
        public AddMembers() {
                //for setting the title for the
internal frame
                super("Add Members", false,
true, false, true);
                //for setting the icon
                setFrameIcon(new
ImageIcon(ClassLoader.getSystemResource("ima
ges/Add16.gif")));
                //for getting the graphical user
interface components display area
                Container cp = getContentPane();

                //for setting the layout
                northPanel.setLayout(new
FlowLayout(FlowLayout.CENTER));
                //for setting the font
                northLabel.setFont(new
Font("Tahoma", Font.BOLD, 14));
                //for adding the label to the panel
                northPanel.add(northLabel);
                //for adding the panel to the
container
                cp.add("North", northPanel);

                //for setting the layout
                centerPanel.setLayout(new
BorderLayout());
                //for setting the border to the
panel

        centerPanel.setBorder(BorderFactory.cre
ateTitledBorder("Add a new member:"));
                //for setting the layout

        informationLabelPanel.setLayout(new
GridLayout(7, 1, 1, 1));
                //for setting the layout

        informationTextFieldPanel.setLayout(ne
w GridLayout(7, 1, 1, 1));

        /**********************************
**************************************
                 * for adding the strings to the
labels, for setting the font                    *
                 * and adding these labels to the
panel.
            *
                 * finally adding the panel to the
container
            *

*****************************************
*****************************/
```

```
                for (int i = 0; i <
informationLabel.length; i++) {

        informationLabelPanel.add(informationL
abel[i] = new JLabel(informaionString[i]));

        informationLabel[i].setFont(new
Font("Tahoma", Font.BOLD, 11));
                }
                //for adding the panel to the
centerPanel
                centerPanel.add("West",
informationLabelPanel);


        /**********************************
**********************************
                 * for adding the JTextField and
JPasswordField to the panel and       *
                 * setting the font to the
JTextField and JPasswordField. Finally      *
                 * adding the panel to the
centerPanel                          *

*****************************************
*****************************/
                for (int i = 0; i <
informationLabel.length; i++) {
                        if (i == 1 || i == 2) {

        informationTextFieldPanel.add(informati
onPasswordField[i - 1] = new
JPasswordField(25));

        informationPasswordField[i -
1].setFont(new Font("Tahoma", Font.PLAIN,
11));
                        }
                        if (i == 0) {

        informationTextFieldPanel.add(informati
onTextField[i] = new JTextField(25));

        informationTextField[i].setFont(new
Font("Tahoma", Font.PLAIN, 11));
                        }
                        if (i == 3 || i == 4 || i == 5
|| i == 6) {

        informationTextFieldPanel.add(informati
onTextField[i - 2] = new JTextField(25));

        informationTextField[i - 2].setFont(new
Font("Tahoma", Font.PLAIN, 11));
                        }
                }
                centerPanel.add("East",
informationTextFieldPanel);


        /**********************************
**********************************
                 * for setting the layout for the
panel,setting the font for the button*
                 * and adding the button to the
panel.
                  *
                 * finally adding the panel to the
container
            *

*****************************************
*****************************/

        insertInformationButtonPanel.setLayout(
new FlowLayout(FlowLayout.RIGHT));

        insertInformationButton.setFont(new
Font("Tahoma", Font.BOLD, 11));

        insertInformationButtonPanel.add(insertI
nformationButton);
                centerPanel.add("South",
insertInformationButtonPanel);
                cp.add("Center", centerPanel);


        /**********************************
**********************************
                 * for setting the layout for the
panel,setting the font for the button*
                 * adding the button to the panel
& setting the border.
*
                 * finally adding the panel to the
container
            *

*****************************************
*****************************/
                southPanel.setLayout(new
FlowLayout(FlowLayout.RIGHT));
                OKButton.setFont(new
Font("Tahoma", Font.BOLD, 11));
                southPanel.add(OKButton);

        southPanel.setBorder(BorderFactory.crea
teEtchedBorder());
                cp.add("South", southPanel);


        /**********************************
**********************************
                 * for adding the action listener to
the button,first the text will be *
                 * taken from the JTextField[]
and make the connection for database,   *
                 * after that update the table in
the database with the new value      *
```

```
**********************************************
*****************************/

        insertInformationButton.addActionListen
er(new ActionListener() {
                        public void
actionPerformed(ActionEvent ae) {
                                //for checking if
there is a missing information
                                if (isCorrect()) {
                                        if
(isPasswordCorrect()) {

        Thread runner = new Thread() {

        public void run() {

                member = new Members();

                Date d=new Date();

                //for checking if there is no same
information in the database

                member.connection("SELECT *
FROM Members WHERE ID = " + data[0]);

                int ID = member.getID();

                if (Integer.parseInt(data[0]) !=
ID) {


        member.update("INSERT INTO
Members
(ID,Password,Name,EMail,Major,Expired)
VALUES (" +

                                data[0] + ", '" +
data[1] + "','" + data[2] + "','" +

                                data[3] + "','" +
data[4] + "','" + data[5] + "')");

                        //for setting the array of
JTextField & JPasswordField to null

                        clearTextField();

                }

                else


        JOptionPane.showMessageDialog(null,
"Member is in the Library", "Error",
JOptionPane.ERROR_MESSAGE);

        }
        };

        runner.start();
                                        }
                                        //if the
password is wrong
                                        else

        JOptionPane.showMessageDialog(null,
"the passowrd is wrong", "Error",
JOptionPane.ERROR_MESSAGE);
                                }
                                //if there is a
missing data, then display Message Dialog
                                else

        JOptionPane.showMessageDialog(null,
"Please, complete the information", "Warning",
JOptionPane.WARNING_MESSAGE);
                        }
                });
                //for adding the action listener for
the button to dispose the frame

        OKButton.addActionListener(new
ActionListener() {
                        public void
actionPerformed(ActionEvent ae) {
                                dispose();
                        }
                });
                //for setting the visible to true
                setVisible(true);
                //show the internal frame
                pack();
        }
}


//import the packages for using the classes in them
into the program

import java.sql.*;

public class Books {
        /**********************************
*****************************************
         ***     declaration of the private
variables used in the program       ***

**********************************************
*********************************/

        private Connection connection = null;
        private Statement statement = null;
        private ResultSet resultSet = null;

        private int bookID;
        private String subject;
        private String title;
```

```
	private String author;
	private String publisher;
	private int copyright;
	private int edition;
	private int pages;
	private String ISBN;
	private int numberOfBooks;
	private int numberOfAvailbleBooks;
	private int numberOfBorrowedBooks;
	private String library;
	private boolean availble;
//	private String URL =
"jdbc:odbc:JLibrary";

	public Books() {
	}

	public int getBookID() {
		return bookID;
	}

	public String getSubject() {
		return subject;
	}

	public String getTitle() {
		return title;
	}

	public String getAuthor() {
		return author;
	}

	public String getPublisher() {
		return publisher;
	}

	public int getCopyright() {
		return copyright;
	}

	public int getEdition() {
		return edition;
	}

	public int getPages() {
		return pages;
	}

	public String getISBN() {
		return ISBN;
	}

	public int getNumberOfBooks() {
		return numberOfBooks;
	}

	public int getNumberOfAvailbleBooks() {
		return numberOfAvailbleBooks;
	}

	public int getNumberOfBorrowedBooks()
{
		return
numberOfBorrowedBooks;
	}

	public String getLibrary() {
		return library;
	}

	public boolean getAvailble() {
		return availble;
	}

	public void connection(String Query) {
		try {

	Class.forName("sun.jdbc.odbc.JdbcOdbc
Driver");
		}
		catch (ClassNotFoundException
cnfe) {

	System.out.println("Books.java\n" +
cnfe.toString());
		}
		catch (Exception e) {

	System.out.println("Books.java\n" +
e.toString());
		}

	/**********************************
*****************************
		 * for making the
connection,creating the statement and update *
		 * the table in the database. After
that,closing the statmenet *
		 * and connection. There is catch
block SQLException for error *

*****************************************
*********************/
		try {
//			connection =
DriverManager.getConnection(URL);
	connection =
DriverManager.getConnection("jdbc:odbc:Driver
={Microsoft Access Driver
(*.mdb)};DBQ=JLibrary.mdb;DriverID=22;REA
DONLY=true) ", "", "");
			statement =
connection.createStatement();
			resultSet =
statement.executeQuery(Query);
			while (resultSet.next()) {
				bookID =
resultSet.getInt(1);
				subject =
resultSet.getString(2);
```

```
                                title =
resultSet.getString(3);
                                author =
resultSet.getString(4);
                                publisher =
resultSet.getString(5);
                                copyright =
resultSet.getInt(6);
                                edition =
resultSet.getInt(7);
                                pages =
resultSet.getInt(8);
                                ISBN =
resultSet.getString(9);
                                numberOfBooks
= resultSet.getInt(10);

        numberOfAvailbleBooks =
resultSet.getInt(11);

        numberOfBorrowedBooks =
resultSet.getInt(12);
                                library =
resultSet.getString(13);
                                availble =
resultSet.getBoolean(14);
                        }
                        resultSet.close();
                        statement.close();
                        connection.close();
                }
                catch (SQLException SQLe) {

        System.out.println("Books.java\n" +
SQLe.toString());
                }
        }

        public void update(String Query) {
                try {

        Class.forName("sun.jdbc.odbc.JdbcOdbc
Driver");
                }
                catch (ClassNotFoundException
cnfe) {

        System.out.println("Books.java\n" +
cnfe.toString());
                }
                catch (Exception e) {

        System.out.println("Books.java\n" +
e.toString());
                }

        /**********************************
**************************
                 * for making the
connection,creating the statement and update *
                 * the table in the database. After
that,closing the statmenet *
                 * and connection. There is catch
block SQLException for error *

**********************************************
*******************/
                try {
                        //connection =
DriverManager.getConnection("jdbc:odbc:JLibra
ry2");
//                      connection =
DriverManager.getConnection(URL);
        connection =
DriverManager.getConnection("jdbc:odbc:Driver
={Microsoft Access Driver
(*.mdb)};DBQ=JLibrary.mdb;DriverID=22;REA
DONLY=true) ", "", "");
                        statement =
connection.createStatement();

        statement.executeUpdate(Query);
                        statement.close();
                        connection.close();
                }
                catch (SQLException SQLe) {

        System.out.println("Books.java\nError:"
+ SQLe.toString());
                }
        }
}


//import the packages for using the classes in them
into the program

import java.sql.*;

public class Borrow {
        /**********************************
**************************************
         ***     declaration of the private
variables used in the program      ***

**********************************************
*********************************/

        private Connection connection = null;
        private Statement statement = null;
        private ResultSet resultSet = null;

        private int bookID;
        private int memberID;
        private Date dayOfBorrowed;
        private Date dayOfReturn;
//      private String URL =
"jdbc:odbc:JLibrary";

        public Borrow() {
        }
```

```
	public int getBookID() {
		return bookID;
	}

	public int getMemberID() {
		return memberID;
	}

	public Date getDayOfBorrowed() {
		return dayOfBorrowed;
	}

	public Date getDayOfReturn() {
		return dayOfReturn;
	}

	public void connection() {
		try {

	Class.forName("sun.jdbc.odbc.JdbcOdbc
Driver");
		}
		catch (ClassNotFoundException
cnfe) {

	System.out.println("Borrow.java\n" +
cnfe.toString());
		}
		catch (Exception e) {

	System.out.println("Borrow.java\n" +
e.toString());
		}

	/**********************************
*****************************
		 * for making the
connection,creating the statement and update *
		 * the table in the database. After
that,closing the statmenet *
		 * and connection. There is catch
block SQLException for error *

*****************************************
*********************/
		try {
//				connection =
DriverManager.getConnection(URL);
	connection =
DriverManager.getConnection("jdbc:odbc:Driver
={Microsoft Access Driver
(*.mdb)};DBQ=JLibrary.mdb;DriverID=22;REA
DONLY=true) ", "", "");
				statement =
connection.createStatement();
				resultSet =
statement.executeQuery("SELECT * FROM
Borrow");
				while (resultSet.next()) {
					bookID =
resultSet.getInt(1);
					memberID =
resultSet.getInt(2);
					dayOfBorrowed
= resultSet.getDate(3);
					dayOfReturn =
resultSet.getDate(4);
				}
				resultSet.close();
				statement.close();
				connection.close();
			}
			catch (SQLException SQLe) {

	System.out.println("Borrow.java\n" +
SQLe.toString());
			}
		}

		public void update(String Query) {
			try {

		Class.forName("sun.jdbc.odbc.JdbcOdbc
Driver");
			}
			catch (ClassNotFoundException
cnfe) {

		System.out.println("Borrow.java\n" +
cnfe.toString());
			}
			catch (Exception e) {

		System.out.println("Borrow.java\n" +
e.toString());
			}

		/**********************************
*****************************
			 * for making the
connection,creating the statement and update *
			 * the table in the database. After
that,closing the statmenet *
			 * and connection. There is catch
block SQLException for error *

*****************************************
*********************/
			try {
//				connection =
DriverManager.getConnection(URL);
		connection =
DriverManager.getConnection("jdbc:odbc:Driver
={Microsoft Access Driver
(*.mdb)};DBQ=JLibrary.mdb;DriverID=22;REA
DONLY=true) ", "", "");
				statement =
connection.createStatement();

		statement.executeUpdate(Query);
```

```
                        statement.close();
                        connection.close();
                }
                catch (SQLException SQLe) {

        System.out.println("Borrow.java\n" +
SQLe.toString());
                }
        }
}
//import the packages for using the classes in them
into the program

import javax.swing.*;
import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.text.SimpleDateFormat;
import java.util.Locale;

/**
 *A public class
 */
public class BorrowBooks extends JInternalFrame
{
        /**********************************
****************************************
         ***     declaration of the private
variables used in the program       ***

****************************************
**********************************/

        //for creating the North Panel
        private JPanel northPanel = new
JPanel();
        //for creating the label
        private JLabel title = new JLabel("BOOK
INFORMATION");

        //for creating the Center Panel
        private JPanel centerPanel = new
JPanel();
        //for creating an Internal Panel in the
center panel
        private JPanel informationPanel = new
JPanel();
        //for creating an array of JLabel
        private JLabel[] informationLabel = new
JLabel[4];
        //for creating an array of String
        private String[] informationString = {"
Write the Book ID:", " Write the Member ID:",
                                " The Current
Data:", " The Return Date:"};
        //for creating an array of JTextField
        private JTextField[] informationTextField
= new JTextField[4];
        //for creating the date in the String
        private String date = new
SimpleDateFormat("dd-MM-yy",
Locale.getDefault()).format(new java.util.Date());
        //for creating an array of string to store
the data
        private String[] data;

        //for creating an Internal Panel in the
center panel
        private JPanel borrowButtonPanel = new
JPanel();
        //for creating the button
        private JButton borrowButton = new
JButton("Borrow");

        //for creating South Panel
        private JPanel southPanel = new
JPanel();
        //for creating the button
        private JButton cancelButton = new
JButton("Cancel");

        //for creating an object
        private Books book;
        private Members member;
        private Borrow borrow;

        //for checking the information from the
text field
        public boolean isCorrect() {
                data = new String[4];
                for (int i = 0; i <
informationLabel.length; i++) {
                        if
(!informationTextField[i].getText().equals(""))
                                data[i] =
informationTextField[i].getText();
                        else
                                return false;
                }
                return true;
        }

        //for setting the array of JTextField to
null
        public void clearTextField() {
                for (int i = 0; i <
informationTextField.length; i++)
                        if (i != 2)

        informationTextField[i].setText(null);
        }

        //constructor of borrowBooks
        public BorrowBooks() {
                //for setting the title for the
internal frame
                super("Borrow Books", false,
true, false, true);
                //for setting the icon
```

```
                setFrameIcon(new
ImageIcon(ClassLoader.getSystemResource("ima
ges/Export16.gif")));
                //for getting the graphical user
interface components display area
                Container cp = getContentPane();

                //for setting the layout
                northPanel.setLayout(new
FlowLayout(FlowLayout.CENTER));
                //for setting the font
                title.setFont(new
Font("Tahoma", Font.BOLD, 14));
                //for adding the label to the panel
                northPanel.add(title);
                //for adding the panel to the
container
                cp.add("North", northPanel);

                //for setting the layout
                centerPanel.setLayout(new
BorderLayout());
                //for setting the layout for the
internal panel
                informationPanel.setLayout(new
GridLayout(4, 2, 1, 1));


        /**********************************
**********************************
                 * for adding the strings to the
labels, for setting the font                    *
                 * and adding these labels to the
panel.
          *
                 * finally adding the panel to the
container
          *

**********************************************
*****************************/
                for (int i = 0; i <
informationLabel.length; i++) {

        informationPanel.add(informationLabel[i
] = new JLabel(informationString[i]));

        informationLabel[i].setFont(new
Font("Tahoma", Font.BOLD, 11));
                        if (i == 2) {

        informationPanel.add(informationTextFi
eld[i] = new JTextField(date));

        informationTextField[i].setFont(new
Font("Tahoma", Font.PLAIN, 11));

        informationTextField[i].setEnabled(false)
;
                        }
                        else {

        informationPanel.add(informationTextFi
eld[i] = new JTextField());

        informationTextField[i].setFont(new
Font("Tahoma", Font.PLAIN, 11));
                                }
                }
                centerPanel.add("Center",
informationPanel);

                //for setting the layout

        borrowButtonPanel.setLayout(new
FlowLayout(FlowLayout.RIGHT));
                //for setting the font to the button
                borrowButton.setFont(new
Font("Tahoma", Font.BOLD, 11));
                //for adding the button to the
panel

        borrowButtonPanel.add(borrowButton);
                //for adding the panel to the
center panel
                centerPanel.add("South",
borrowButtonPanel);
                //for setting the border to the
panel

        centerPanel.setBorder(BorderFactory.cre
ateTitledBorder("Borrow a book:"));
                //for adding the panel to the
container
                cp.add("Center", centerPanel);

                //for adding the layout
                southPanel.setLayout(new
FlowLayout(FlowLayout.RIGHT));
                //for setting the font to the button
                cancelButton.setFont(new
Font("Tahoma", Font.BOLD, 11));
                //for adding the button to the
panel
                southPanel.add(cancelButton);
                //for setting the border to the
panel

        southPanel.setBorder(BorderFactory.crea
teEtchedBorder());
                //for adding the panel to the
container
                cp.add("South", southPanel);


        /**********************************
**********************************
                 * for adding the action listener to
the button,first the text will be *
                 * taken from the JTextField[]
and make the connection for database,   *
```

```
                    * after that update the table in
the database with the new value      *

*****************************************
*****************************/

          borrowButton.addActionListener(new
ActionListener() {
                              public void
actionPerformed(ActionEvent ae) {
                                        //for checking if
there is a missing information
                                        if (isCorrect()) {
                                                  Thread
runner = new Thread() {

          public void run() {

          book = new Books();

          member = new Members();

          borrow = new Borrow();

          book.connection("SELECT * FROM
Books WHERE BookID = " + data[0]);

          member.connection("SELECT * FROM
Members WHERE MemberID = " + data[1]
```