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| File:COMSATS new logo.jpg - Wikimedia Commons  **Class Assignment 4** | **Subject:**  **object oriented programming**  **submitted by:**  **Daoud Hussain**  (Sp21-bcs-102)  **Class:**  **bcs-3b**  **submitted to:**  **mam saneeha amir**  **date of submission:**  **June 13 , 2022** |

Person Class

import java.util.\*;

import java.io.Serializable;

public class Person implements Serializable{

private String name;

private String phone;

private String gender;

public Person(){

//Default Argument Constructor

}

public Person(String name, String phone, String gender){

this.name = name;

this.phone = phone;

this.gender = gender;

}

//Setters

public void setName(String name){

if(name != "")

this.name = name;

}

public void setPhone(String phone){

if(phone != "")

this.phone = phone;

}

public void setGender(String gender){

if(gender != "")

this.gender = gender;

}

//Getters

public String getName(){

return this.name;

}

public String getGender(){

return this.gender;

}

public String getPhone(){

return this.phone;

}

//Method to display values

public String toString(){

String text = "Name: " + name + "\nGender: " + gender + "\nPhone: " + phone ;

return text;

}

}

Employee class

import java.io.Serializable;

class Employee implements Serializable{

String name;

int age;

Employee(String n, int a){

name =n;

age = a;

}

}

Department Class

import java.util.\*;

import java.io.Serializable;

public class Department implements Serializable{

private String name;

private String location;

public Department(){

//Default Argument Constructor

}

public Department(String name, String location){

this.name = name;

this.location = location;

}

//Setters

public void setName(String name){

if(name != "")

this.name = name;

}

public void setlocation(String location){

if(location != "")

this.location = location;

}

//Getters

public String getName(){

return this.name;

}

public String getLocation(){

return this.location;

}

}

FileOperation Class

import java.io.EOFException;

import java.io.File;

import java.io.FileInputStream;

import java.io.FileNotFoundException;

import java.io.FileOutputStream;

import java.io.IOException;

import java.io.ObjectInputStream;

import java.io.ObjectOutputStream;

import java.util.ArrayList;

public class FileOperation{

public void writeAFile(Student s){

try {

File f = new File("Student.ser");

if(f.exists()){

MyObjectOutputStream myObject = new MyObjectOutputStream(new FileOutputStream(f, true));

myObject.writeObject(s);

myObject.close();

}else{

ObjectOutputStream myObject = new ObjectOutputStream(new FileOutputStream(f));

myObject.writeObject(s);

myObject.close();

}

} catch (Exception e) {

e.printStackTrace();

}

}

public void readAFile(){

try {

ObjectInputStream redFile = new ObjectInputStream(new FileInputStream("Student.ser"));

try {

while(true){

Student s = (Student) redFile.readObject();

System.out.println(s.toString());

}

}catch (ClassNotFoundException e) {

System.out.println("Object not found");

}catch(EOFException e){

System.out.println("End of file");

}

}catch(FileNotFoundException e){

System.out.println("File not found ");

}

catch(IOException e){

System.out.println("some error occured");

}

}

public String SearchAStudentByName(String name){

String str = "";

try{

ObjectInputStream obj = new ObjectInputStream(new FileInputStream("Student.ser"));

try {

while(true){

Student s = (Student) obj.readObject();

if(s.getName().equals(name)){

str += "\n"+s.toString();

}

}

}catch (ClassNotFoundException e) {

System.out.println("Sorry! the targetted class is not Found\n");

}catch(EOFException e){

obj.close();

System.out.println("Sorry! the targetted file has ended\n");

}catch(ArithmeticException e){

System.out.println("Couldn't perform operation due to some error");

}

catch(IOException e){

System.out.println("Couldn't perform operation due to some error");

}

}catch(IOException e){

System.out.println("Error cautght");

}

return str;

}

public void updateGpaByName(String name, String gpa) {

try{

ArrayList<Student> list = new ArrayList<Student>();

boolean flag = false;

ObjectInputStream obj = new ObjectInputStream(new FileInputStream("Student.ser"));

try {

while(true){

Student s = (Student) obj.readObject();

if(s.getName().equals(name)){

s.setGPA(gpa);

flag = true;

}

list.add(s);

}

}

catch(FileNotFoundException e){

System.out.println("Sorry! the targetted file is not found\n");

}

catch(IOException e){

System.out.println("Input Output Exception\n");

}

catch(ClassNotFoundException e){

System.out.println("Sorry! the targetted class is not found\n");

}

try {

File f = new File("Student.ser");

f.delete();

for(int i = 0; i<list.size(); i++){

writeAFile(list.remove(i));

}

}

catch (Exception e) {

System.out.println("Some error occured");

}

if(flag){

System.out.println("Updated the file successfully!");

}

else{

System.out.println("Updated the file successfully!");

}

}

catch(IOException e){

System.out.print("Any error while working!!!");

}

}

public void removeByName(String name){

try{

ArrayList<Student> list = new ArrayList<Student>();

boolean flag = false;

ObjectInputStream obj = new ObjectInputStream(new FileInputStream("Student.ser"));

try {

while(true){

Student s = (Student) obj.readObject();

list.add(s);

}

}

catch(SecurityException e){

System.out.println("Security");

}

catch(FileNotFoundException e){

System.out.println("File not found");

}

catch(EOFException e){

obj.close();

System.out.println("End of file");

}

catch(IOException e){

System.out.println("Io exception");

}

catch (Exception e) {

System.out.println("Some error occured");

}

try {

File f = new File("Student.ser");

f.delete();

for(int i = 0; i<list.size(); i++){

if(name.equals(list.get(i).getName())){

list.remove(i);

System.out.println("iNside loop if");

}else{

writeAFile(list.remove(i));

}

}

}catch(SecurityException e){

System.out.println("Security");

}catch (Exception e) {

System.out.println("Some error occured");

}

if(flag){

System.out.print("Removed successfully!");

}

else{

System.out.print("Couldn't remove successfully!");

}

}

catch(IOException e){

System.out.print("Any random error occured");

}

}

}

Java Swing - GUI

Main class

import java.awt.GridLayout;

import java.awt.Color;

import javax.swing.JFrame;

import javax.swing.ImageIcon;

import javax.swing.JButton;

import javax.swing.JOptionPane;

public class Main{

public static void main(String[] args) {

JFrame frame = new JFrame();

frame.setSize(500,400);

frame.setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

frame.setLayout(new GridLayout(5,1));

frame.setTitle("Student Management System");

ImageIcon image = new ImageIcon("student1.png");

frame.setIconImage(image.getImage());

JButton button1 = new JButton("Add a Student");

button1.setFocusable(false);

button1.addActionListener(e -> new AddStudent());

JButton button2 = new JButton("Search a Student by name");

button2.addActionListener(e -> new SearchByName());

button2.setFocusable(false);

JButton button3 = new JButton("Search a Student by Department");

button3.addActionListener(e -> new SearchByDepartment());

button3.setFocusable(false);

JButton button4 = new JButton("Update the GPA of Student by Name");

button4.addActionListener(e -> new UpdateByName());

button4.setFocusable(false);

JButton button5 = new JButton("Delete a Student by Name");

button5.addActionListener(e -> new DeleteByName());

button5.setFocusable(false);

frame.add(button1);

frame.add(button2);

frame.add(button3);

frame.add(button4);

frame.add(button5);

frame.setVisible(true);

}

}

Add A Student Class

import javax.swing.JFrame;

import javax.swing.ImageIcon;

import java.awt.Color;

import javax.swing.JOptionPane;

public class AddStudent extends JFrame{

AddStudent(){

String name = JOptionPane.showInputDialog("What is your name? ");

String gpa = JOptionPane.showInputDialog("What is your gpa? ");

String phone = JOptionPane.showInputDialog("What is your phone? ");

String gender = JOptionPane.showInputDialog("What is your gender? ");

String semester = JOptionPane.showInputDialog("What is your semester? ");

String section = JOptionPane.showInputDialog("What is your section? ");

String departmentName = JOptionPane.showInputDialog("What is your department name? ");

String departmentLocation = JOptionPane.showInputDialog("What is your department Location? ");

Department myDept = new Department(departmentName, departmentLocation);

Student student1 = new Student(name, phone, gender, gpa, semester, section, myDept);

FileOperation myFile = new FileOperation();

myFile.writeAFile(student1);

// AddStudent(String name, String phone, String gender, String gpa, String semester, String section, String myDept);

JOptionPane.showMessageDialog(null, "Congratulations! Student is added successfully", "Update", JOptionPane.INFORMATION\_MESSAGE );

}

}

Search Student by name class

import javax.swing.JFrame;

import javax.swing.ImageIcon;

import java.awt.Color;

import javax.swing.JOptionPane;

import java.io.EOFException;

import java.io.File;

import java.io.FileInputStream;

import java.io.FileNotFoundException;

import java.io.FileOutputStream;

import java.io.IOException;

import java.io.ObjectInputStream;

public class SearchByName {

SearchByName() {

try{

String name = JOptionPane.showInputDialog("Enter the name you want to search? ");

String str = "";

ObjectInputStream obj = new ObjectInputStream(new FileInputStream("Student.ser"));

try {

while(true){

Student s = (Student) obj.readObject();

if(s.getName().equals(name)){

JOptionPane.showMessageDialog(null, "Yes! Student is present!!", "Update", JOptionPane.INFORMATION\_MESSAGE );

}

else{

JOptionPane.showMessageDialog(null, "Yes! Student is not present!!", "Update", JOptionPane.INFORMATION\_MESSAGE );

}

}

}catch (ClassNotFoundException e) {

System.out.println("Sorry! the targetted class is not Found\n");

}catch(EOFException e){

obj.close();

System.out.println("Sorry! the targetted file has ended\n");

}catch(IOException e){

System.out.println("Couldn't perform operation due to some error");

}

}

catch(IOException e){

System.out.println("Any error");

}

}

}

Search Student by department Class

import javax.swing.JFrame;

import javax.swing.ImageIcon;

import java.awt.Color;

import javax.swing.JOptionPane;

import java.io.EOFException;

import java.io.File;

import java.io.FileInputStream;

import java.io.FileNotFoundException;

import java.io.FileOutputStream;

import java.io.IOException;

import java.io.ObjectInputStream;

public class SearchByDepartment {

SearchByDepartment(){

try{

String deptName = JOptionPane.showInputDialog("Enter the name you want to search? ");

String str = "";

ObjectInputStream obj = new ObjectInputStream(new FileInputStream("Student.ser"));

try {

while(true){

Department dept = (Department) obj.readObject();

if(dept.getName().equals(deptName)){

JOptionPane.showMessageDialog(null, "Yes! Student is present!!", "Update", JOptionPane.INFORMATION\_MESSAGE );

}

else{

JOptionPane.showMessageDialog(null, "Yes! Student is not present!!", "Update", JOptionPane.INFORMATION\_MESSAGE );

}

}

}catch (ClassNotFoundException e) {

System.out.println("Sorry! the targetted class is not Found\n");

}catch(EOFException e){

obj.close();

System.out.println("Sorry! the targetted file has ended\n");

}catch(IOException e){

System.out.println("Couldn't perform operation due to some error");

}

}

catch(IOException e){

System.out.println("Input output exception");

}

}

}

Update GPA by name Class

import javax.swing.JFrame;

import javax.swing.JOptionPane;

import java.io.File;

import java.io.IOException;

import javax.swing.JOptionPane;

public class UpdateByName{

UpdateByName(){

String name = JOptionPane.showInputDialog("Enter the name you want to update:");

String gpa = JOptionPane.showInputDialog("Enter the GPA you want to update:");

FileOperation f= new FileOperation();

f.updateGpaByName(name, gpa);

JOptionPane.showMessageDialog(null, "Updated GPA Successfully!!", "Update", JOptionPane.INFORMATION\_MESSAGE );

}

}

Delete student by name Class

import javax.swing.JFrame;

import javax.swing.ImageIcon;

import java.awt.Color;

import javax.swing.JOptionPane;

import java.io.EOFException;

import java.io.File;

import java.io.FileInputStream;

import java.io.FileNotFoundException;

import java.io.FileOutputStream;

import java.io.IOException;

import java.io.ObjectInputStream;

import javax.swing.JOptionPane;

import java.util.ArrayList;

public class DeleteByName{

DeleteByName() {

String name = JOptionPane.showInputDialog("Enter the name you want to update:");

FileOperation f= new FileOperation();

f.removeByName(name);

JOptionPane.showMessageDialog(null, "Record deleted Successfully!!", "Update", JOptionPane.INFORMATION\_MESSAGE );

}

}

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