Zachary Goss

Inheritance & Polymorphism

**Question 1:**

**Main code:**

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\* @author Zach

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public class main {

public static void main (String[] args)

{

//person first middle last gender 4

Person mary = new Person("Mary", "K", "Smith", "Female");

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

//military active Or Reserve 5

MilitaryPerson jim = new MilitaryPerson("Jim", "F", "Shaboozey", "Male", "Active");

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

//navy base shipsub date rank 9

NavySailor fellis = new NavySailor("Fellis", "Q", "Robertson", "Male", "Reserve", "Indianapolis", "Submarine", 12052007, 3);

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

//officer commendations battalion 11

Officer saundra = new Officer("Saundra", "M", "Haffelbough", "Female", "Active", "Tango", "Submarine", 11171984, 4, 8, 6);

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

//enlisted squad bunk 11

Enlisted quenton = new Enlisted("Quenton", "T", "Riesling", "Male", "Reserve", "Bethesda", "USS Steambag", 10152014, 1, 9, 15);

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

}

}

**Person Class:**

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public class Person {

private String FirstName;

private String MiddleInitial;

private String LastName;

private String Gender;

public Person(String f, String m, String l, String g)

{

FirstName = f;

MiddleInitial = m;

LastName = l;

Gender = g;

}

public String GetFirst()

{

return FirstName;

}

public String GetMiddle()

{

return MiddleInitial;

}

public String GetLast()

{

return LastName;

}

public String GetGender()

{

return Gender;

}

public void ChangeFirst(String x)

{

FirstName = x;

}

public void ChangeMiddle(String x)

{

MiddleInitial = x;

}

public void ChangeLast(String x)

{

LastName = x;

}

public void ChangeGender(String x)

{

Gender = x;

}

public String toString()

{

return String.format("\n%s %s %s ", FirstName, MiddleInitial, LastName);

}

}

**Military Person Class:**

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public class MilitaryPerson extends Person{

private String ActiRes;

public MilitaryPerson(String f, String m, String l, String g, String a)

{

super(f, m, l, g);

ActiRes = a;

}

public String GetActi()

{

return ActiRes;

}

public void ChangeActi(String a)

{

ActiRes = a;

}

public String toString()

{

return String.format("%s \n Active or Reserve: %s", super.toString(), ActiRes);

}

}

**Navy Sailor Class:**

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public class NavySailor extends MilitaryPerson{

private String Base;

private String ShipSub;

private int ComDate;

private int Rank;

public NavySailor(String f, String m, String l, String g, String a, String b, String s, int c, int r)

{

super(f, m, l, g, a);

Base = b;

ShipSub = s;

ComDate = c;

Rank = r;

}

public String GetBase()

{

return Base;

}

public String GetShip()

{

return ShipSub;

}

public int GetDate()

{

return ComDate;

}

public int GetRank()

{

return Rank;

}

public void ChangeBase(String x)

{

Base = x;

}

public void ChangeShip(String x)

{

ShipSub = x;

}

public void ChangeDate(int x)

{

ComDate = x;

}

public void ChangeRank(int x)

{

Rank = x;

}

public String toString()

{

return String.format("%s \n Base: %s Ship/Submarine: %s Comission Date: %8d Rank: %d", super.toString(),Base, ShipSub, ComDate, Rank);

}

}

**Officer Class:**

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public class Officer extends NavySailor{

private int Battalion;

private int Commendations;

public Officer(String f, String m, String l, String g, String a, String b, String s, int c, int r, int bat, int com)

{

super(f, m, l, g, a, b, s, c, r);

Battalion = bat;

Commendations = com;

}

public int GetBat()

{

return Battalion;

}

public int GetCom()

{

return Commendations;

}

public void ChangeBat(int x)

{

Battalion = x;

}

public void ChangeCom(int x)

{

Commendations = x;

}

public String toString()

{

return String.format("%s \n Battalion: %d Commendations: %d", super.toString(), Battalion, Commendations);

}

}

**Enlisted Class:**

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public class Enlisted extends NavySailor{

private int Squad;

private int Bunk;

public Enlisted(String f, String m, String l, String g, String a, String b, String s, int c, int r, int squa, int bun)

{

super(f, m, l, g, a, b, s, c, r);

Squad = squa;

Bunk = bun;

}

public int GetSquad()

{

return Squad;

}

public int GetBunk()

{

return Bunk;

}

public void ChangeSquad(int x)

{

Squad = x;

}

public void ChangeBunk(int x)

{

Bunk = x;

}

public String toString()

{

return String.format("%s \n Squad Number: %d Bunk Number: %d", super.toString(), Squad, Bunk);

}

}

**Output:**

debug:

Mary K Smith

Jim F Shaboozey

Active or Reserve: Active

Fellis Q Robertson

Active or Reserve: Reserve

Base: Indianapolis Ship/Submarine: Submarine Comission Date: 12052007 Rank: 3

Saundra M Haffelbough

Active or Reserve: Active

Base: Tango Ship/Submarine: Submarine Comission Date: 11171984 Rank: 4

Battalion: 8 Commendations: 6

Quenton T Riesling

Active or Reserve: Reserve

Base: Bethesda Ship/Submarine: USS Steambag Comission Date: 10152014 Rank: 1

Squad Number: 9 Bunk Number: 15

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**Question 2**

**Main Class:**

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import java.util.Scanner;

import java.security.SecureRandom;

public class main {

public static void main(String[] args)

{

double TempGPA = 0.0;

int TempSID = 0;

String TempFirst = "BLANK";

String TempLast = "BLANK";

String TempMajor = "BLANK";

double TempHGPA = 0.0;

int TempSAT = 0;

int counter = 0;

Student[] List = new Student[5];

Scanner input = new Scanner(System.in);

while(TempSID != -1)

{

Student Blank = new Student();

System.out.println("Hello, please input a StudentID");

TempSID = input.nextInt();

System.out.println("Thank you, now enter their Current GPA ");

TempGPA = input.nextDouble();

System.out.println("Wonderful, now please enter the Student's First Name ");

TempFirst = input.next();

System.out.println("Perfect, now input the Student's Last Name ");

TempLast = input.next();

System.out.println("Thank you, enter their major next ");

TempMajor = input.next();

//System.out.println("Yay, now enter the Student's High School GPA ");

//TempHGPA = input.nextDouble();

//System.out.println("And lastly, enter the student's SAT Score");

//TempSAT = input.nextInt();

Blank.StudentID = TempSID;

Blank.GPA = TempGPA;

Blank.FirstName = TempFirst;

Blank.LastName = TempLast;

Blank.Major = TempMajor;

List[counter++] = Blank;

}

for(int i = 0; i < 5; i++)

{

if(List[i].StudentID != -1)

{

System.out.println(List[i].toString());

}

}

//UnderGraduate Mary = new UnderGraduate(12345, "Mary", "Williams", 3.78, 1275);

//Graduate Tim = new Graduate(23456, "Tim", "Duncan", 3.95, 650);

//System.out.println(Mary.toString());

//returns a string for all info in the mary object

//System.out.println(Tim.toString());

}

}

**Student Class:**

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public class Student {

public int StudentID;

public double GPA;

public String FirstName;

public String LastName;

public String Major;

//default constructor

public Student()

{

StudentID = -1;

GPA = 0.0;

FirstName = "BLANK";

LastName = "BLANK";

Major = "BLANK";

}

public Student(int s, double g, String f, String l, String m)

{

StudentID = s;

GPA = g;

FirstName = f;

LastName = l;

Major = m;

}

public String toString()

{

return String.format("\n%6d %5.3f %s %s %s ", StudentID, GPA, FirstName, LastName, Major);

}

}

**Undergraduate Class:**

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public class UnderGraduate extends Student{

public double HS\_GPA;

public int SAT;

public UnderGraduate()

{

super(0, 0.0, "BLANK", "BLANK", "BLANK");

HS\_GPA = 0.0;

SAT = 0;

}

public UnderGraduate(int s, double g, String f, String l, String m, double h, int sat)

{

super(s, g, f, l, m);

HS\_GPA = h;

SAT = sat;

}

public String toString()

{

return String.format(" %s \n H.S. GPA: %5.3f SAT: %5d", super.toString(), HS\_GPA, SAT);

//this calls the previous toString method we made in student

}

public void PrintLevel()

{

System.out.printf("\n H.S. GPA: %5.3f SAT: %5d", HS\_GPA, SAT);

}

}

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public class Graduate extends Student{

public double UG\_GPA;

public int GMAT;

public Graduate()

{

super(0, 0.0, "BLANK", "BLANK", "BLANK");

UG\_GPA = 0;

GMAT = 0;

}

public Graduate(int s, double g, String f, String l, String m, double gpa, int gmat)

{

super(s, g, f, l, m);

//passes this info to the superclass Student

UG\_GPA = gpa;

GMAT = gmat;

}

public String toString()

{

return String.format("%s \n GPA: %5.3f GMAT: %5d ", super.toString(),UG\_GPA, GMAT);

}

public void PrintLevel()

{

System.out.printf("\n Undergrad GPA: %5.3f GMAT: %5d", UG\_GPA, GMAT);

}

}

**Graduate Class:**

**Output:**

run:

Hello, please input a StudentID

12345

Thank you, now enter their Current GPA

3.2

Wonderful, now please enter the Student's First Name

Ernest

Perfect, now input the Student's Last Name

Hergle

Thank you, enter their major next

IT

Hello, please input a StudentID

423553

Thank you, now enter their Current GPA

3.9

Wonderful, now please enter the Student's First Name

Billy

Perfect, now input the Student's Last Name

Jumbo

Thank you, enter their major next

ARts

Hello, please input a StudentID

45325

Thank you, now enter their Current GPA

3.2

Wonderful, now please enter the Student's First Name

Samuel

Perfect, now input the Student's Last Name

Jackson

Thank you, enter their major next

Football

Hello, please input a StudentID

454545

Thank you, now enter their Current GPA

3.2

Wonderful, now please enter the Student's First Name

Betty

Perfect, now input the Student's Last Name

Sanderson

Thank you, enter their major next

Paint

Hello, please input a StudentID

-1

Thank you, now enter their Current GPA

2.1

Wonderful, now please enter the Student's First Name

JIm

Perfect, now input the Student's Last Name

Failure

Thank you, enter their major next

Undeclared

12345 3.200 Ernest Hergle IT

423553 3.900 Billy Jumbo ARts

45325 3.200 Samuel Jackson Football

454545 3.200 Betty Sanderson Paint

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