**Task 1**

**Consider the following code:**

|  |
| --- |
| **class msgClass{** |
| **public int content;** |
| **}** |
| **public class FinalT5A{** |
| **private int sum = 2;** |
| **private int y = 1;** |
| **public int x = 1;** |
| **public void methodA(){** |
| **int x=0, y =0, i = 0;** |
| **while (i < 2){** |
| **msgClass myMsg = new msgClass();** |
| **myMsg.content = this.x;** |
| **this.y = this.y + methodB(myMsg, myMsg.content);** |
| **System.out.println(x + " " + y+ " " + sum);** |
| **y = this.y / 2;** |
| **x = y + sum/2 - i;** |
| **sum = x + y + myMsg.content;** |
| **i++;** |
| **}** |
| **System.out.println(x + " " + y+ " " + sum);** |
| **}** |
| **private int methodB(msgClass mg2, int mg1){** |
| **int x = 0;** |
| **y = y + mg2.content;** |
| **mg2.content = y + mg1;** |
| **x = this.x + 3 + mg1;** |
| **sum = sum + x + y;** |
| **System.out.println(this.x + " " + this.y+ " " + sum);** |
| **mg2.content = sum - mg1 ;** |
| **return sum;** |
| **}** |
| **}** |

What is the output of the following code sequence?

|  |  |  |  |
| --- | --- | --- | --- |
| **FinalT5A fT5A = new FinalT5A();**  **fT5A.methodA();** | **x** | **y** | **sum** |
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#### **Task 2**

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| --- |
| **public class FinalT6A{** |
| **public static int temp = 3;** |
| **private int sum;** |
| **private int y = 2;** |
| **public FinalT6A(int x, int p){** |
| **temp+=3;** |
| **y = temp - p;** |
| **sum = temp + x;** |
| **System.out.println(x + " " + y+ " " + sum);** |
| **}** |
| **public void methodA(){** |
| **int x=0, y =0;** |
| **y = y + this.y;** |
| **x = this.y + 2 + temp;** |
| **sum = x + y + methodB(temp, y);** |
| **System.out.println(x + " " + y+ " " + sum);** |
| **}** |
| **public int methodB(int temp, int n){** |
| **int x = 0;** |
| **y = y + (++temp);** |
| **x = x + 2 + n;** |
| **sum = sum + x + y;** |
| **System.out.println(x + " " + y+ " " + sum);** |
| **return sum;** |
| **}** |
| **}** |

What is the output of the following code sequence?

|  |  |  |  |
| --- | --- | --- | --- |
| **FinalT6A q1 = new FinalT6A(2,1);**  **q1.methodA();**  **q1.methodA();** | **x** | **y** | **sum** |
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#### **Task 3**

**public class Quiz1{**

**public static int temp = 4;**

**public int sum;**

**public int y;**

**public Quiz1(){**

**y = temp - 1;**

**sum = temp + 1;**

**temp+=2;**

**}**

**public Quiz1(int p){**

**y = temp + p ;**

**sum = p+ temp + 1;**

**temp-=1;**

**}**

**public void methodA(){**

**int x=0, y =0;**

**y = y + this.y;**

**x = this.y + 2 + temp;**

**sum = x + y + methodB(x, y);**

**System.out.println(x + " " + y+ " " + sum);**

**}**

**public int methodB(int m, int n){**

**int x = 0;**

**y = y + m + (++temp);**

**x = x + 2 + n;**

**sum = sum + x + y;**

**System.out.println(x + " " + y+ " " + sum);**

**return sum;**

**}**

**}**

**Consider the following code:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Quiz1 q1 = new Quiz1();**  **q1.methodA();**  **q1.methodA();**  **Quiz1.temp+= 2;**  **Quiz1 q2 = new Quiz1(2);**  **q2.methodA();**  **q2.methodA();** | **x** | **y** | **sum** |
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**Task 4**

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| --- |
| **class A{** |
| **public static int temp = 4;** |
| **public int sum;** |
| **public int y;** |
| **public A(){** |
| **y = temp - 2;** |
| **sum = temp + 1;** |
| **temp-=2;** |
| **}** |
| **public void methodA(int m, int n){** |
| **int x = 0;** |
| **y = y + m + (temp++);** |
| **x = x + 1 + n;** |
| **sum = sum + x + y;** |
| **System.out.println(x + " " + y+ " " + sum);** |
| **}** |
| **}** |
| **class B{** |
| **public static int x;** |
| **public int y = 5;** |
| **public int temp = -5;** |
| **public int sum = 2;** |
| **public B(){** |
| **y = temp + 3 ;** |
| **sum = 3 + temp + 2;** |
| **temp-=2;** |
| **}** |
| **public B(B b){** |
| **sum = b.sum;** |
| **x = b.x;** |
| **b.methodB(2,3);** |
| **}** |
| **public void methodA(int m, int n){** |
| **int x = 2;** |
| **y = y + m + (temp++);** |
| **x = x + 5 + n;** |
| **sum = sum + x + y;** |
| **System.out.println(x + " " + y+ " " + sum);** |
| **}** |
| **public void methodB(int m, int n){** |
| **int y = 0;** |
| **y = y + this.y;** |
| **x = this.y + 2 + temp;** |
| **methodA(x, y);** |
| **sum = x + y + sum;** |
| **System.out.println(x + " " + y+ " " + sum);** |
| **}** |
| **}** |

**Consider the following code:**

|  |  |  |  |
| --- | --- | --- | --- |
| **A a1 = new A();**  **B b1 = new B();**  **B b2 = new B(b1);**  **b1.methodA(1, 2);**  **b2.methodB(3, 2);** | **x** | **y** | **sum** |
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**Task 5**

|  |
| --- |
| **class A{** |
| **public static int temp = 3;** |
| **public int sum;** |
| **public int y;** |
| **public int x;** |
| **public A(){** |
| **int temp = -3;** |
| **int sum = 7;** |
| **y = temp - 5;** |
| **sum = temp + 2;** |
| **temp-=2;** |
| **this.x = sum + temp + y;** |
| **}** |
| **public A(int y, int temp){** |
| **y = temp - 1+ x;** |
| **sum = temp + 2 -x;** |
| **temp-=2;** |
| **}** |
| **public void methodA(int m, int [] n){** |
| **int x = 0;** |
| **y = y + m + methodB(x,m)+(temp++)+y;** |
| **x = this.x + 2 + (++n[0]);** |
| **sum = sum + x + y;** |
| **n[0] = sum + 2;** |
| **System.out.println(n[0] + x + " " + y+ " " + sum + n[0]);** |
| **}** |
| **public int methodB(int m, int n){** |
| **int [] y = {0};** |
| **this.y = y[0] + this.y + m;** |
| **x = this.y + 2 + temp - n;** |
| **sum = x + y[0] + this.sum;** |
| **System.out.println(y[0]+ x + "this.temp" + y[0]+ " " +sum+ y[0]);** |
| **return y[0];** |
| **}** |
| **}** |
| **class B{** |
| **public int y=1;** |
| **public int temp=-3;** |
| **public int x = 1;** |
| **public static int sum = 2;** |
| **public B(){** |
| **y = temp + 1 ;** |
| **x = 3 + temp + x;** |
| **temp-=2;** |
|  |
| **}** |
| **public B(B b){** |
| **sum = b.sum + this.sum;** |
| **x = b.x + x;** |
| **b.methodB(3,5);** |
| **}** |
| **public void methodA(int m, int [] n){** |
| **int x = 0;** |
| **y = y + m + (temp++);** |
| **x = x + 2 + (++n[0]);** |
| **sum = sum + x + y;** |
| **n[0] = sum + 2;** |
| **System.out.println(temp + x + " " + y+ " " + sum + temp);** |
| **}** |
| **public void methodB(int m, int n){** |
| **int [] y = {0};** |
| **this.y = y[0] + this.y + m;** |
| **x = this.y + 2 + temp - n;** |
| **methodA(x, y);** |
| **sum = x + y[0] + this.sum;** |
| **System.out.println(n + x + " " + y[0]+ " " + sum + n);** |
| **}** |
| **}** |
| **Consider the following code:** |
| **int x[] = {35};** |
| **A a1 = new A();** |
| **A a2 = new A(-5,-7);** |
| **B b1 = new B();** |
| **B b2 = new B(b1);** |
| **a1.methodA(1, x);** |
| **b2.methodB(3, 2);** |
| **a2.methodA(1, x);** |

#### **Task 6**

|  |
| --- |
| **class msgClass{** |
| **public int content;** |
| **}** |
|  |
| **public class Quiz3{** |
| **private int sum;** |
| **private int y;** |
| **public static int x;** |
| **public Quiz3(){** |
| **sum = 5;** |
| **x = 2;** |
| **y = 2;** |
| **}** |
| **public Quiz3(int k){** |
| **sum = sum + k;** |
| **y = 3;** |
| **x += 2;** |
| **}** |
| **public void methodA(){** |
| **int x=1, y=1;** |
| **msgClass [] msg = new msgClass[1];** |
| **msgClass myMsg = new msgClass();** |
| **myMsg.content = Quiz3.x;** |
| **msg[0] = myMsg;** |
| **msg[0].content = this.y + myMsg.content;** |
| **this.y = this.y + methodB(msg[0]);** |
| **y = methodB(msg[0]) + this.y;** |
| **x = y + methodB(msg, msg[0]);** |
| **sum = x + y + msg[0].content;** |
| **System.out.println(x + " " + y+ " " + sum);** |
| **}** |
| **private int methodB(msgClass [] mg2, msgClass mg1){** |
| **int x = 2;** |
| **y = y + mg2[0].content;** |
| **mg2[0].content = y + mg1.content;** |
| **x = x + 2 + mg1.content;** |
| **sum = sum + x + y;** |
| **mg1.content = sum - mg2[0].content ;** |
| **System.out.println(Quiz3.x + " " + this.y+ " " + sum);** |
| **return sum;** |
| **}** |
| **public int methodB(msgClass mg1){** |
| **int x = 1, y = 2;** |
| **y = sum + mg1.content;** |
| **this.y = y + mg1.content;** |
| **x = Quiz3.x + 5 + mg1.content;** |
| **sum = sum + x + y;** |
| **Quiz3.x = mg1.content + x + 3;** |
| **System.out.println(x + " " + y+ " " + sum);** |
| **return y;** |
| **}** |
| **}** |

**Consider the following code:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Quiz3 a1 = new Quiz3();**  **Quiz3 a2 = new Quiz3(5);**  **msgClass msg = new msgClass();**  **a1.methodA();**  **a2.methodB(msg);** | **x** | **y** | **sum** |
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#### **Task 7**

**Study the following output**

|  |  |
| --- | --- |
| **Code** | **Output** |
| **public class StudentTest{**  **public static void main(String [] args){**  **Student s1 = new Student();**  **System.out.println(s1.getName());**  **Student s2 = new Student("Matin");**  **System.out.println(s2.getName());**  **Student s3 = new Student("Saad");**  **System.out.println(s3.getName());**  **System.out.println(Student.numberOfStudents);**  **}**  **}** | **default name**  **Matin**  **Saad**  **3** |

Write the code for the Student class so that the StudentTest class generates the output shown above.

**Task 8**

**Output:**

**========================**

**Name: Saad Abdullah**

**Department: CSE**

**List of courses**

**========================**

**CSE 110 Programming Language I**

**CSE 111 Programming Language-II**

**========================**

**========================**

**Name: Mumit Khan**

**Department: CSE**

**List of courses**

**========================**

**CSE 220 Data Structures**

**CSE 221 Algorithms**

**CCSE 230 Discrete Mathematics**

**========================**

**========================**

**Name: Sadia Kazi**

**Department: CSE**

**List of courses**

**========================**

**CSE 310 Object Oriented Programming**

**CSE 320 Data Communications**

**CSE 340 Computer Architecture**

**========================**

**Tester:**

public class TestTeacher{

public static void main(String [] args){

Teacher t1 = new Teacher("Saad Abdullah", "CSE");

Teacher t2 = new Teacher("Mumit Khan", "CSE");

Teacher t3 = new Teacher("Sadia Kazi", "CSE");

Course c1 = new Course("CSE 110 Programming Language I");

Course c2 = new Course("CSE 111 Programming Language-II");

Course c3 = new Course("CSE 220 Data Structures");

Course c4 = new Course("CSE 221 Algorithms");

Course c5 = new Course("CCSE 230 Discrete Mathematics");

Course c6 = new Course("CSE 310 Object Oriented Programming");

Course c7 = new Course("CSE 320 Data Communications");

Course c8 = new Course("CSE 340 Computer Architecture");

t1.addCourse(c1);

t1.addCourse(c2);

t2.addCourse(c3);

t2.addCourse(c4);

t2.addCourse(c5);

t3.addCourse(c6);

t3.addCourse(c7);

t3.addCourse(c8);

t1.printDetail();

t2.printDetail();

t3.printDetail();

}

}

Write the Teacher and Course classes so that the TestTeacher class produces the outputs given above

**Task 9**

Consider the following code:

**public class AccountTester**

**{**

**public static void main(String[] args)**

**{**

**System.out.println(Account.interestRate);**

**Account a1 = new Account();**

**System.out.println(a1.nameKi());**

**System.out.println(a1.balanceKi());**

**a1.nameBoshao("Mashrafe Murtaza");**

**a1.balanceBoshao(5000);**

**System.out.println(a1.nameKi());**

**System.out.println(a1.balanceKi());**

**Account a2 = new Account("Mustafizur Rahman",50);**

**System.out.println(a2.nameKi());**

**System.out.println(a2.balanceKi());**

**a1.withdraw(4900);**

**a2.withdraw(25);**

**a1.withdraw(4899);**

**}**

**}**

**Write the account class given that the output for the above code is :**

**5.0**

**Default Account**

**0.0**

**Mashrafe Murtaza**

**5000.0**

**Mustafizur Rahman**

**50.0**

**The account balance after deducting withdraw amount is equal to or less than minimum. Cannot withdraw**

**The account balance after deducting withdraw amount is equal to or less than minimum. Cannot withdraw**

**Withdraw successful! New balance is: 101.0**

Task 10

Complete the **Student** class so that the **main** method prints the following:

**Name of the Student: Bob**

**ID of the Student: 1**

**Name of the Student: Tom**

**ID of the Student: 2**

**Name of the Student: Jack**

**ID of the Student: 3**

**Name of the Student: Jill**

**ID of the Student: 4**

**public class Student{**

**//Your code here**

**}**

**public class Printer{**

**public void printDetail(Student s){**

**System.out.println("Name of the Student: "+s.name);**

**System.out.println("ID of the Student: "+s.id);**

**}**

**}**

**public class Test{**

**public static void main(String [] args){**

**Student s1 = new Student("Bob", 1);**

**Student s2 = new Student("Tom", 2);**

**Student s3 = new Student("Jack", 3);**

**Student s4 = new Student("Jill", 4);**

**Printer pr = new Printer();**

**pr.printDetail(s1);**

**pr.printDetail(s2);**

**pr.printDetail(s3);**

**pr.printDetail(s4);**

**}**

**}**

**Task 11**

**Task 1**

**public class Dog {**

**private String color = "Black";**

**//your code here**

**}**

**public class Quiz {**

**public static void main (String[] args){**

**Dog odie = new Dog("Red");**

**Dog goofy = new Dog("Blue");**

**odie.bark();**

**goofy.bark();**

**odie.changeColor("Brown");**

**odie.bark();**

**}**

**}**

**//Complete the Dog class so the main method above produces the following output:**

**Red dog is barking**

**Blue dog is barking**

**Brown dog is barking**

**Task 12**

Page 1 of 1 SET-A

|  |
| --- |
| **public class Cat{** |
| public String color = "White"; |
| public String action = "sitting"; |
| //your code here |
| **}** |
| **public class Test{** |
| public static void main(String [] args){ |
| Cat c1 = new Cat(); |
| Cat c2 = new Cat("Black"); |
| Cat c3 = new Cat("Brown", "jumping"); |
| Cat c4 = new Cat("Red", "purring"); |
| c1.printCat(); |
| c2.printCat(); |
| c3.printCat(); |
| c4.printCat(); |
| c1.changeColor("Blue"); |
| c3.changeColor("Purple"); |
| c1.printCat(); |
| c3.printCat(); |
| } |
| **}** |

**Output**:

White cat is sitting

Black cat is sitting

jumping cat is Brown

purring cat is Red

Blue cat is sitting

Purple cat is Brown