Java Mid2

Q4: Write one or more Java statements: [5 pts.] (1 + 2 + 2)

a- Write one statement that will multiply the value of double variable ***dnum*** by 6 then assign it to i variable ***inum.***

Note: Assume that all variables are already declared.

```
int inum=(int)(dnum)*6);
```

b- Write a ***switch*** to test the value of integer variable **day**, if it is 1, 2, 3, 4, or 5 print "Weekday" if it 7 print "Weekend", otherwise print "Invalid".

```
switch(day){
case 1:
case 2:
case 3:
case 4:
case 5: System.out.println("Weekday");
Break;
case 6:
case 7: System.out.println("Weekend");
Break;
default:
System.out.println("Invalid");
Break;
}
```

c- Write an ***if/else*** statement that adds 1 to the variable ***minors*** if the variable ***age*** is less than 18, adds 1 to the variable ***adults*** if ***age*** is between 18 and 64, and adds 1 to the variable ***seniors*** and prints the char 'S' if ***age*** is 65 or older.

Note: All variables are of type int, declared and initialized.

```
System.out.println("Enter age");
age=kbd.nextInt();

if(age<18){
minors=++minors;
}
else if(18<=age<=64)
{
adults=++adults;
}
Seniors=++Seniors;
}

else
{
System.out.println("'S'");
```

-0.25

Q5: Write a complete program: [4 pts.]

Read three temperatures, if their sum is greater than 60 degrees, print the message: "*FIRE!! Temperature reached 60 degrees*". If one of the entered temperature value is negative, print the message: "*Negative value was entered*".

```
import java.util.*;

public class temperatures {

public static void main (String args[]) {
Scanner Read = new Scanner(System.in);
System.out.println("Enter 3 temperatures");

int tem = Read.nextInt();
int tem1 = Read.nextInt();
int tem2 = Read.nextInt();

int Sum = tem + tem1 + tem2;

if (Sum > 60) {

System.out.println("FIRE!! Temperature reached 60 degrees");
} else if ((tem < 0) || (tem1 < 0) || (tem2 < 0)) {

System.out.println("Negative value was entered");
}

}} // End main and class
```

False: [3 pts. =0.75 each]

Statement	True/False
1- Logical operators take *numeric* and *boolean* values as operands.	T ✗ -0.75
2- The *JVM* translate the code into bytecode.	F ✓
s.substring(3) will return a string from index 3 up till s.length() -1	T ✓
Program terminates with a run-time error message, if the user enters the input value ***5.8*** for the variable ***num*** in this statement ***num = console.nextInt();***	T ✓

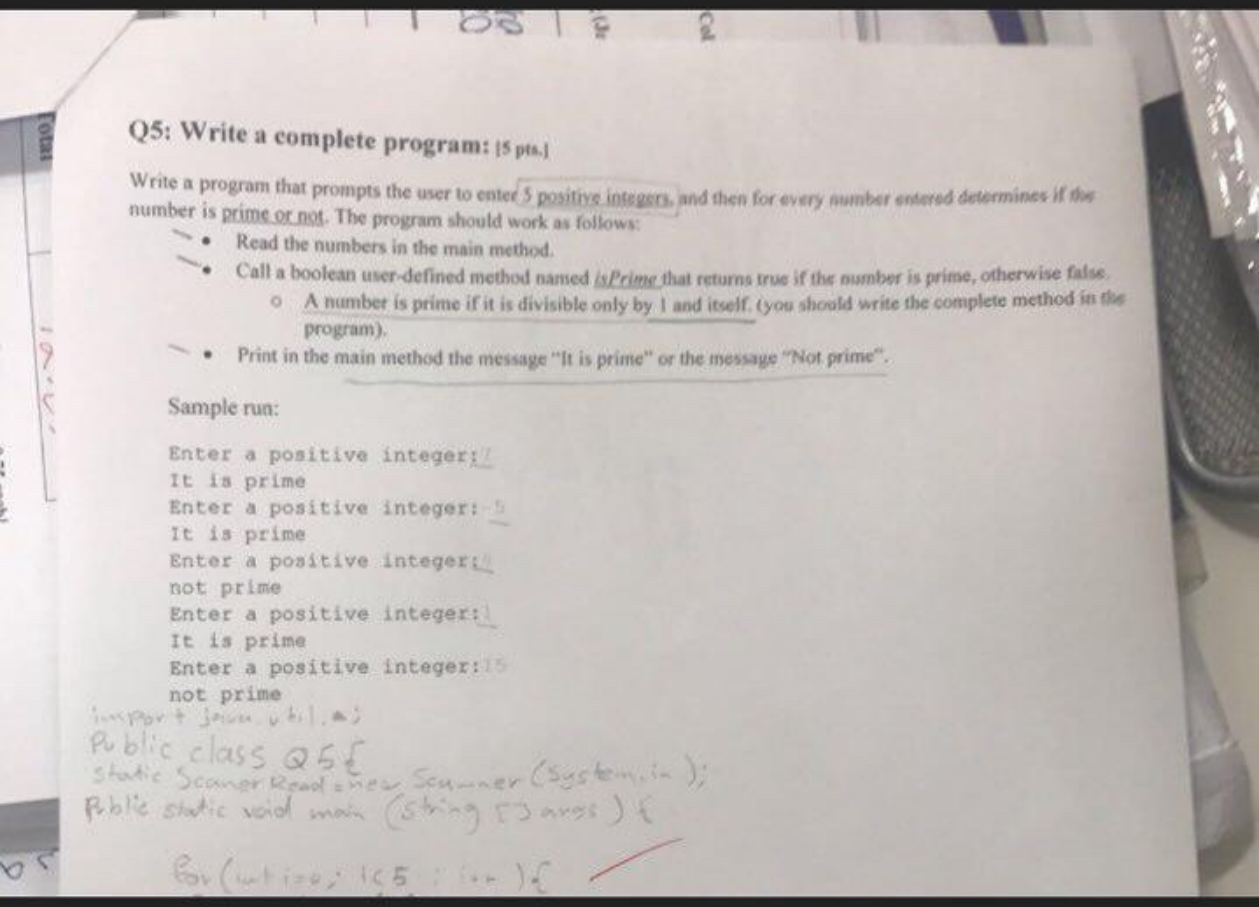
int num =

Q2: Find and correct errors in the following code (there are 4 errors): [4 pts.] (0.5 find error, 0.5 correct the error)

Note: Do not remove any statement.

```
1. import static java.lang.Math.*;
2. import java.util.*;
3. public class errors {
4. static Scanner input = new Scanner (System.in);
5. public static void main(String[] args){
6.   String[] array = {"Ahmad","451","Ali","T34"};
7.   int array2[]= new int[5];
8.   boolean flag= false;
9.   int index =0, num, sum =0;
10.  int j = input.nextInt();
11.  int minimum = min(j,array[1]);
12.  System.out.println("Enter:");
13.  String search = input.next();
14.    while (!flag && index<=array.length){
15.      if (search.equals(array[index]))
16.          flag=true;
17.      index++;
18.    }
19.    while (num<5){
20.      array2[num]=input.nextInt();
21.      find_negative(array2[num]);
22.      num++;
23.    }
24.  }
25.  public static boolean find_negative(int x) {
26.    if (x<0)
27.        System.out.println("Error!, Negative Numbers");
28.    else
29.        System.out.println("Positive Numbers");
30.    }
31.  }
```

Line No	Error	Correction
11	int minimum=min(j,array[1])	min cannot take String min(j, ParseInteger"451"=451
19	(num<5) num	int num=0; (num<5)
21	wrong calling (array2[num])	int x=array2[num] find_negative(x);
25	boolean →	void there is no return



Q5: Write a complete program: [5 pts.]

Write a program that prompts the user to enter 5 positive integers, and then for every number entered determines if the number is prime or not. The program should work as follows:

- Read the numbers in the main method.
- Call a boolean user-defined method named *isPrime* that returns true if the number is prime, otherwise false.
  - A number is prime if it is divisible only by 1 and itself. (you should write the complete method in the program).
- Print in the main method the message "It is prime" or the message "Not prime".

Sample run:

```
Enter a positive integer:7
It is prime
Enter a positive integer:5
It is prime
Enter a positive integer:4
not prime
Enter a positive integer:1
It is prime
Enter a positive integer:15
not prime
```

```
import java.util.*;
Public class Q5{
static Scanner Read=new Scanner(System.in);
Public static void main (String[]args){

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

Q3: What is the output for the following code segments: [4 pts.] (2+2)

Notes:

- *Please use ~ to represent space.*
- *Any extra output is -0.25*

1.

```
import static java.lang.Math.*;
public class Program1{
   public static void main (String args[]) {
      double x = -3.5;
      int [] a = new int[10];
      int [] b = new int[10];
      b = a;
      b[5]= 6;
      a[5] = 10;
      System.out.println( b[5] + " " + a[5]);
      System.out.println(round(x));
      System.out.println(ceil(3.5));
   }
}
```

Output

```
10 ~10
-2.0
4.0
```

2.

```
public class Program2 {
   public static void dis() {
      System.out.println(" in method dis");
   }
   public static int encrypt(int w, char q){
      int m;
      if (q == 'r')
         m= w/7;
      else {
         m= w%9;
         dis();
      }
      return m;
   }

   public static int m(int i) {
      return i+1;
   }

   public static void main(String[] args) {
      int y =0;
      int j =7;
      char []list = {'t','r'};
      for (int i=0; i<list.length;i++) {
         y =encrypt(j,list[i]);
         System.out.println(y);
      }
      System.out.println(m(j));
   } //end main
} // end class
```

Output

```
in method dis
7
1
17
```

: What is the output for the following code segments: [4 pts.] (1+1.5+1.5)

tes:

- *Please use ~ to represent space.*
- *Any extra output is -0.25*

a-

```
boolean x=false;
int t=0, j=1, k=2;
x= ++t==j || k%2>0;
System.out.print(t+" "+x+" "+k);
```

Output

1~True~True ✓ ✓ ✗ -0.25

b-

```
//Unicode 'A'=65, 'B'=66, 'C'=67
char inputChar = 'A';
switch (inputChar) {
  case 'A':
  case 'a':
  System.out.println(inputChar);
  inputChar=(inputChar=='A')?++inputChar:'Z';

  case 'Z':
  case 'z':
  System.out.println(inputChar);
      break;

   default:
   System.out.println(inputChar + " is not
found");
      break;
   }
```

Output

A ✓

66 -1

c-

```
int x=1, y=3, z=3;
if ((--x == 1) && (y == 3)) {
   System.out.println("good " + z--);
}
else if ((x == 0) && (y == 3)){
   System.out.println("better" + --z);
}
else {
   System.out.println("excellent" + z++);

}
```

Output

excellent~3

✗ -1.5

Q1: State if the following statements are True or False: [3 pts. =0.75 each]

Statement	True/False
We can specify array size by either declaring it as a constant or reading it from the user during program execution.	T ✓
The continue statement skips the remaining statements inside the loop; and proceeds with the next iteration, if any.	T ✓
In void method, we can use break statement to exit early.	F ✓
If the number of required iterations is not known, and the loop should execute at least once, then we must use a ***while*** loop. do while	T ✗

(1 Found) -0.75

Q2: Find and correct errors in the following code segments (1 error each): [4 pts.] (0.5 find e 0.5 correct the error)

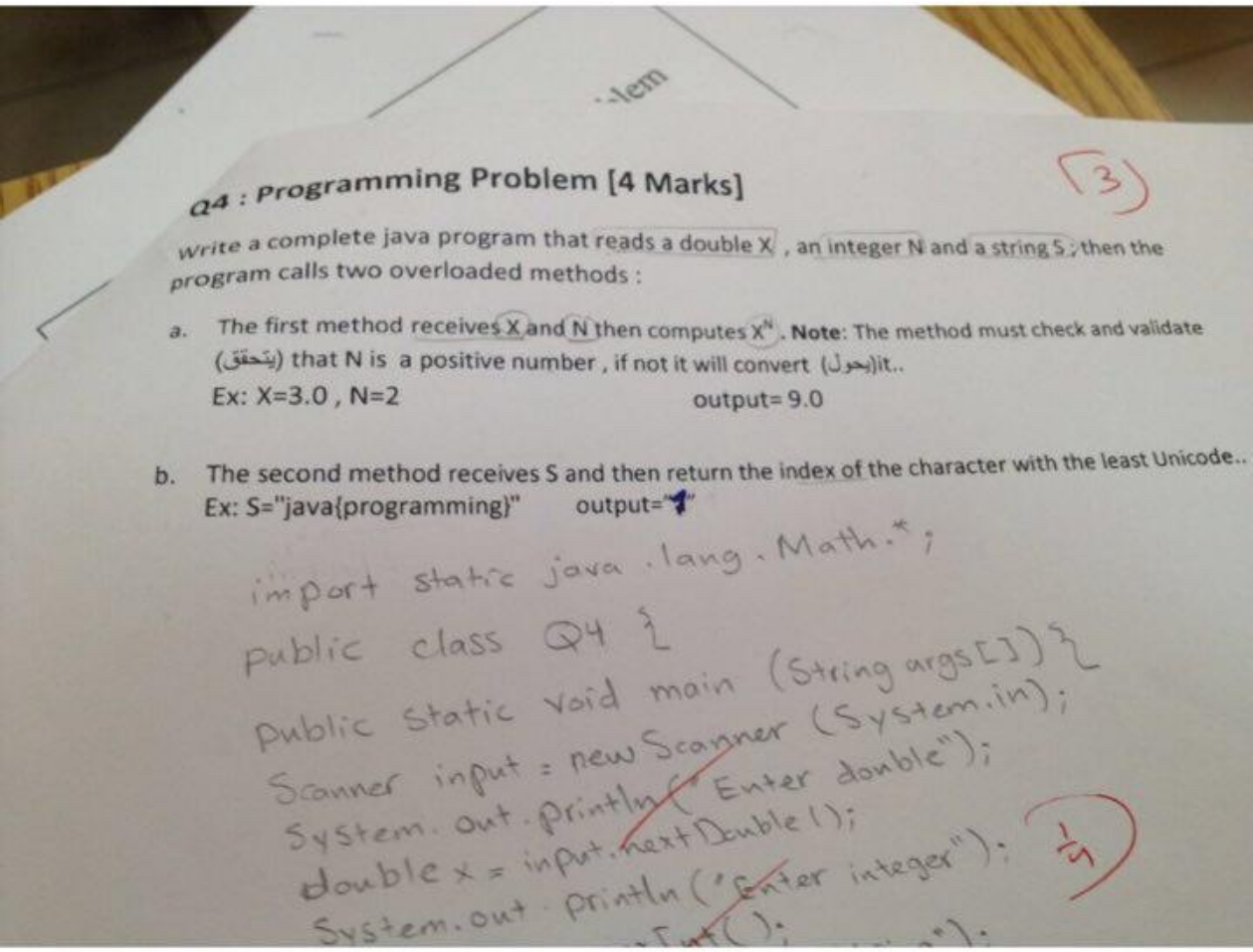
Line	a)	Line	b)
1	`final int DAYS_OF_MONTH= 31;`	1	`String str="CSC111";`
2	`Scanner input = new Scanner(System.in);`	2	`char c='S';`
3	`String nameOfMonth;`	3	`System.out.print(str.indexOf(c)`
4	`nameOfMonth=input.next();`	4	`System.out.print(str.charAt(2.5)`
5	`if(nameOfMonth.equals("February"))`	5	
6	`DAYS_OF_MONTH= 28;`		
Error	line 5	Error	line 4
Correction or Reason	if (nameOfmonth=="February") (==) → Right one	Correction or Reason	charAt(int) charA(2)

Line	c)	Line	d)
1	`int num=520;`	1	`int x=5;`
2	`double x=92.67;`	2	`if(!x<2)`
3	`String str= "Computer Science";`	3	`System.out.println(x);`
4	`System.out.printf("%d%.2f%s%n",num,str, x);`	4	`else x++;`
Error	(line 4) .2f% not for string	Error	line 2
Correction or Reason	System.out.printf("%d.%s .%2f%n", num, str, x);	Correction or Reason	if(!(x<2))

Q2: Find and correct errors in the following code segments (1 error each): [4 pts.] (0.5 find e 0.5 correct the error)

Line	a)	Line	b)
1	`final int DAYS_OF_MONTH= 31;`	1	`String str="CSC111";`
2	`Scanner input = new Scanner(System.in);`	2	`char c='S';`
3	`String nameOfMonth;`	3	`System.out.print(str.indexOf(c));`
4	`nameOfMonth=input.next();`	4	`System.out.print(str.charAt(2.5));`
5	`if(nameOfMonth.equals("February"))`	5	
6	`DAYS_OF_MONTH= 28;`		
Error	line 5	Error	line 4
Correction or Reason	if (nameOfmonth=="february") (==) → Right one	Correction or Reason	charAt(int) charA(2)

Line	c)	Line	d)
1	`int num=520;`	1	`int x=5;`
2	`double x=92.67;`	2	`if(!x<2)`
3	`String str= "Computer Science";`	3	`System.out.println(x);`
4	`System.out.printf("%d%.2f%s%n",num,str, x);`	4	`else x++;`
Error	(line 4) .2f% not for string	Error	line 2
Correction or Reason	System.out.printf("%d.%s .%2f%n", num, str, x);	Correction or Reason	if(!(x<2))



Q4 : Programming Problem [4 Marks] (3)

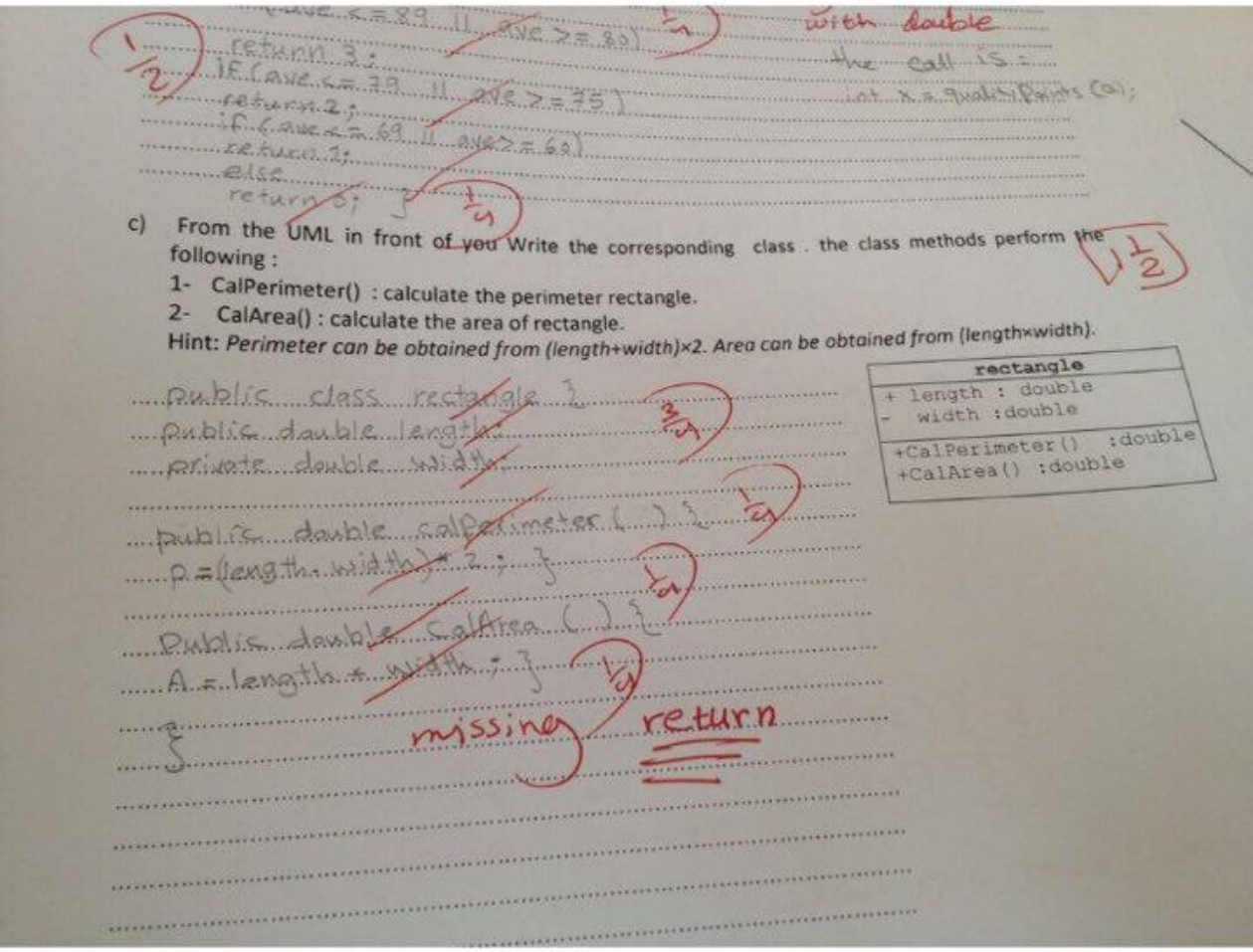
Write a complete java program that reads a double X , an integer N and a string S ; then the program calls two overloaded methods :

a. The first method receives X and N then computes X^N . **Note**: The method must check and validate (يتحقق) that N is a positive number , if not it will convert (يحول)it..
Ex: X=3.0 , N=2 output= 9.0

b. The second method receives S and then return the index of the character with the least Unicode..
Ex: S="java{programming}" output="1"

```
import static java.lang.Math.*;
public class Q4 {
Public static void main (String args[]){
Scanner input = new Scanner (System.in);
System.out.println("Enter double");
double x = input.nextDouble();
System.out.println("Enter integer");
```

1/4



```
if (ave <= 89 || ave >= 80)
    return 3;
if (ave <= 79 || ave >= 75)
    return 2;
if (ave <= 69 || ave >= 60)
    return 1;
else
    return 0;
```

with double
the call is :
int x = qualityPoints(a);

c) From the UML in front of you Write the corresponding class . the class methods perform the following :

1- CalPerimeter() : calculate the perimeter rectangle.
2- CalArea() : calculate the area of rectangle.
Hint: *Perimeter can be obtained from (length+width)×2. Area can be obtained from (length×width).*

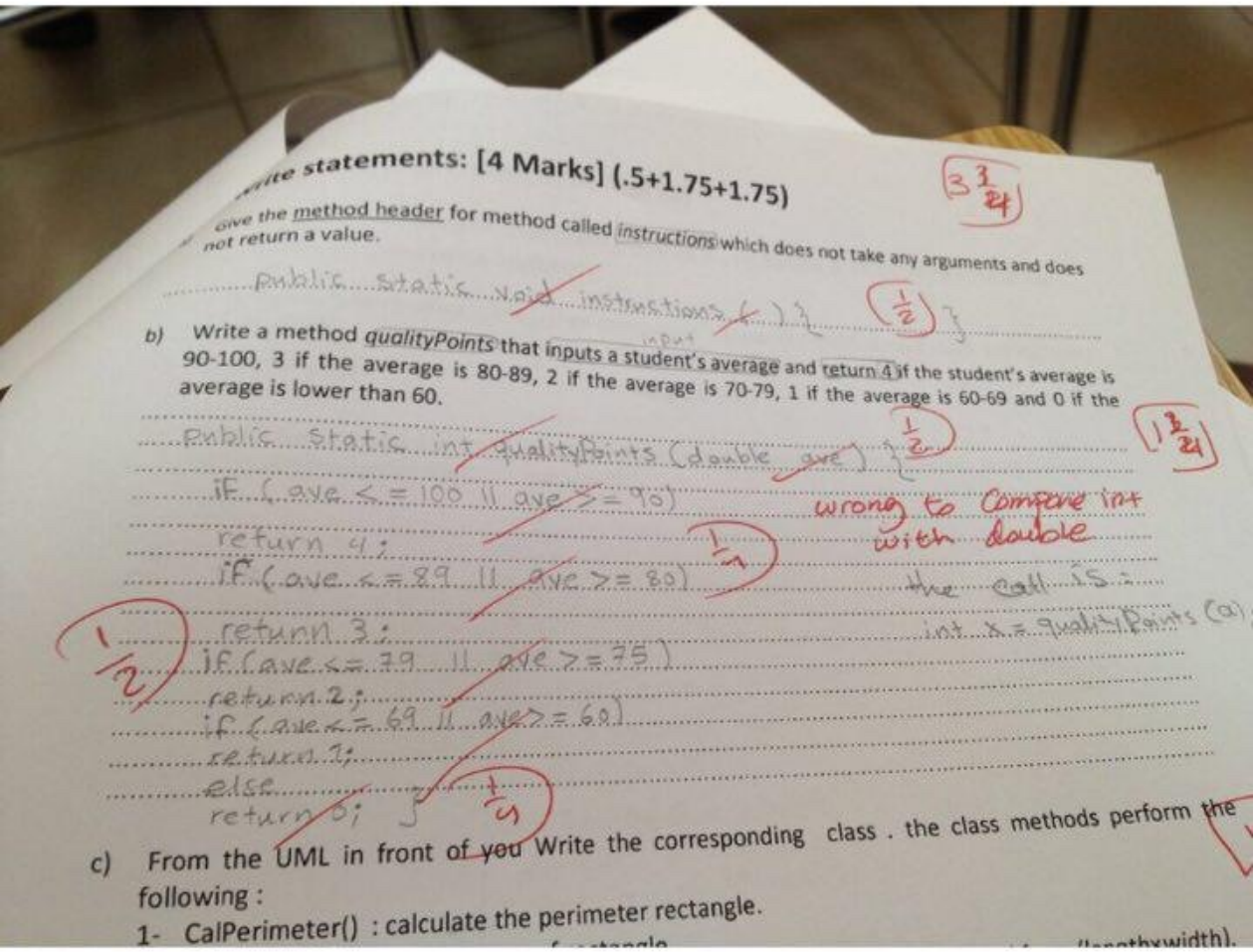
rectangle
+ length : double - width :double
+CalPerimeter() :double +CalArea() :double

```
public class rectangle {
public double length;
private double width;

public double calPerimeter ( ) {
p = (length + width) * 2 ; }

Public double CalArea ( ) {
A = length * width ; }
}
```

missing return



...ite statements: [4 Marks] (.5+1.75+1.75)

...ive the method header for method called instructions which does not take any arguments and does not return a value.

public static void instructions ( ) { }

b) Write a method qualityPoints that inputs a student's average and return 4 if the student's average is 90-100, 3 if the average is 80-89, 2 if the average is 70-79, 1 if the average is 60-69 and 0 if the average is lower than 60.

```
public static int qualityPoints (double ave)
if ( ave <= 100 || ave >= 90)
return 4;
if (ave <=89 || ave >= 80)
return 3;
if (ave <= 79 || ave >= 75)
return 2;
if (ave <= 69 || ave >= 60)
return 1;
else
return 0;
```

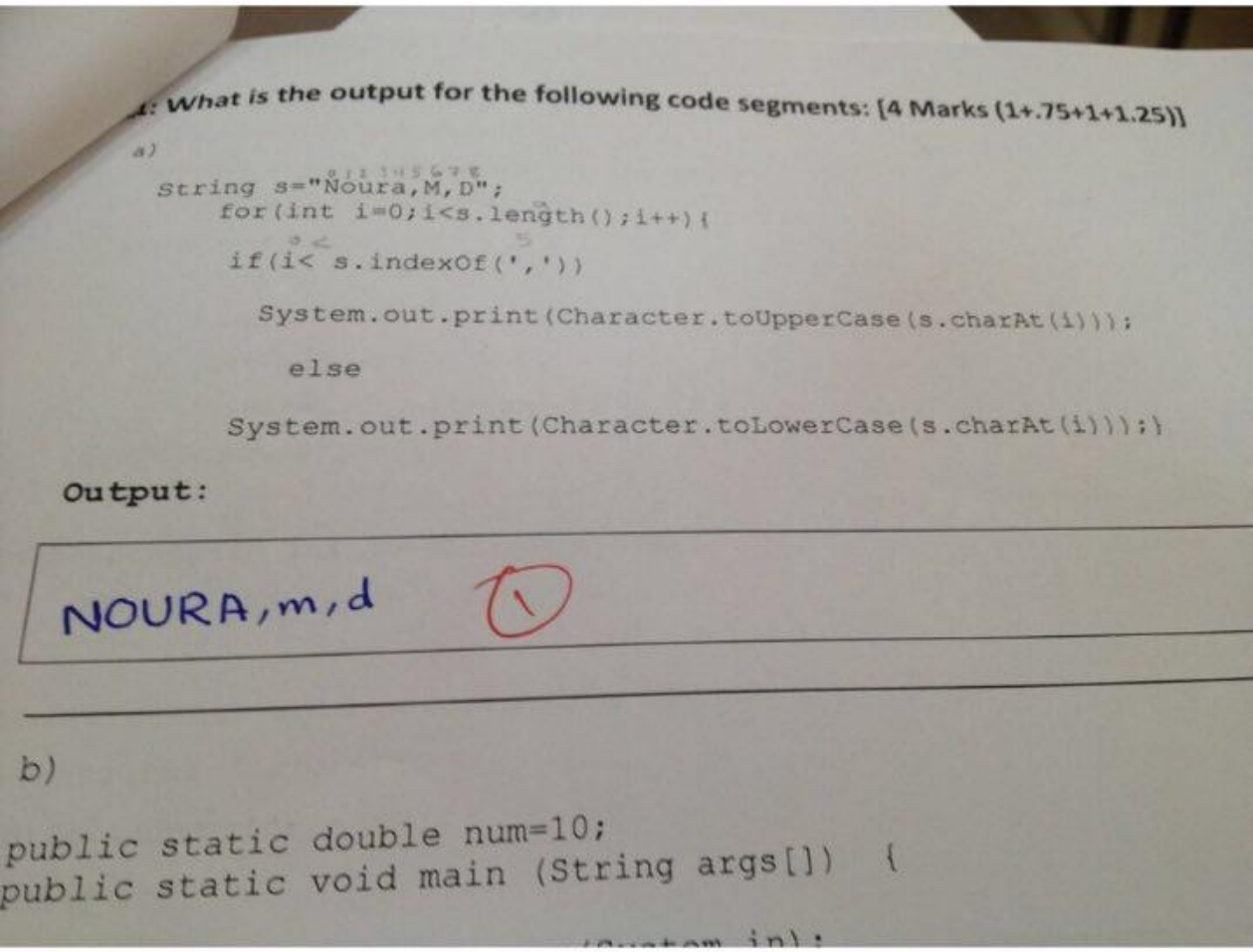
wrong to compare int with double

the call is:

```
int x = qualityPoints (a)
```

c) From the UML in front of you Write the corresponding class . the class methods perform the following :

1- CalPerimeter() : calculate the perimeter rectangle.



: What is the output for the following code segments: [4 Marks (1+.75+1+1.25)]

a)

```
String s="Noura,M,D";
    for(int i=0;i<s.length();i++){
     if(i< s.indexOf(','))
       System.out.print(Character.toUpperCase(s.charAt(i)));
         else
       System.out.print(Character.toLowerCase(s.charAt(i)));}
```

Output:

NOURA,m,d (1)

b)

```
public static double num=10;
public static void main (String args[])  {
```

: Find and correct errors in the following code segments (1 error each):[3 Marks]

a)	line	b)

public class MyProgramm{
public static void main(String args[]){
int count=0;
String str="Welcome to Java";
if(str.substring(0,str.indexOf("Java"))>5)
count++;}
	1
	2
	3
	4
	5
	6
		final int DAYS_OF_YEAR=365;
		String typeOfYear;
		typeOfYear=input.next();
		if (typeOfYear.equals("leap"))
		DAYS_OF_YEAR=366;
		System.out.println(DAYS_OF_YEAR);

error		line 5 DAYS_OF_YEAR=366;
Correction or reason		because final int DAYS_YEAR=365; is constant value not be change
c)	line	d)

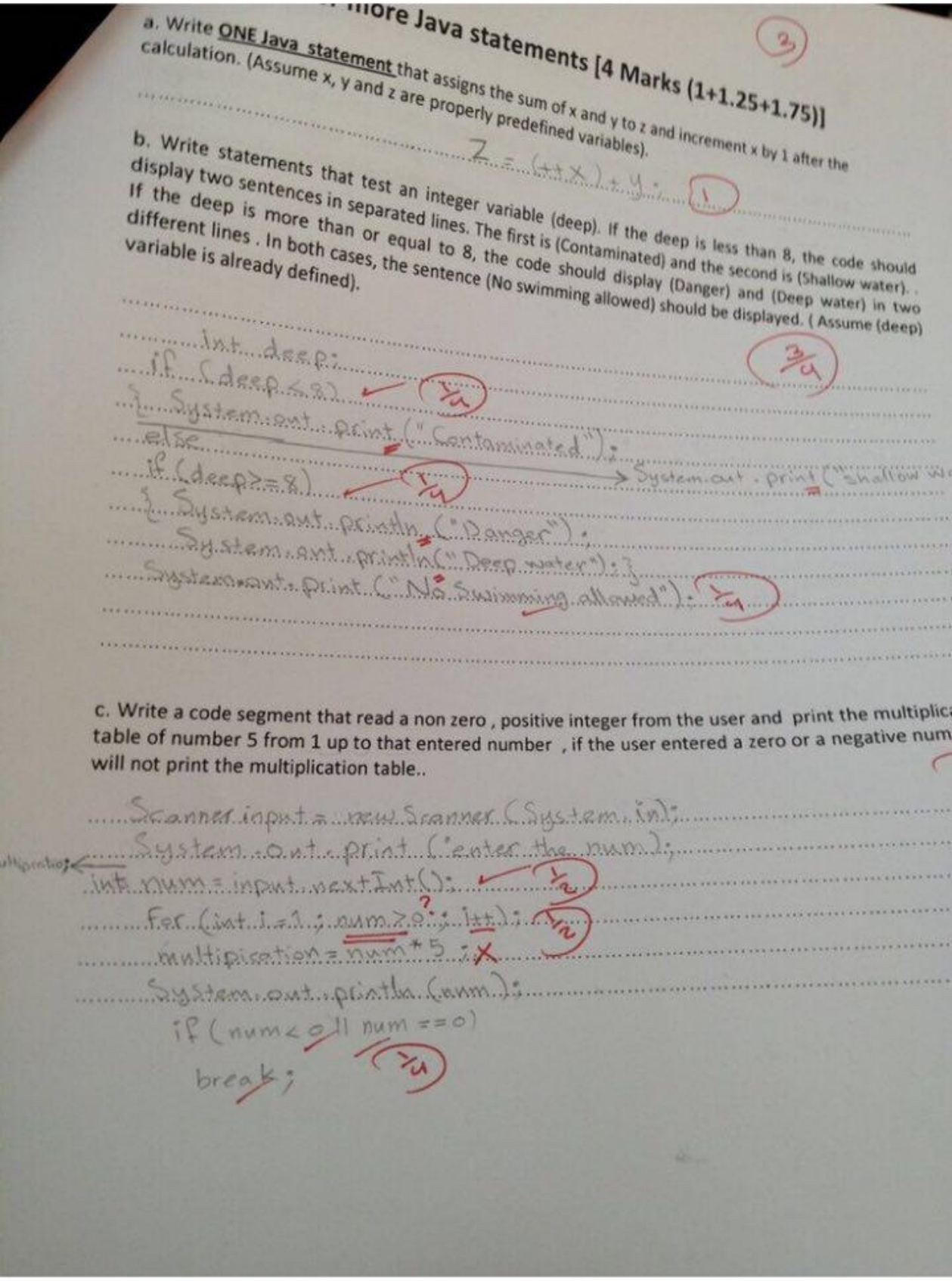
int count=0;
while(count <5){
num=input.nextInt();
if (count==4)
continue;
count++;}
	1
	2
	3
	4
	5
		String patient="Mohammed";
		String age="25" , ID="123p"
		int retiredAge=0 , id=0;
		id= Integer.parseInt(ID);
		retiredAge=Integer.parseInt(age);

error		line 4 id=Integer.parseInt(ID);
Correction or reason		ID = Integer.parseInt(ID); because id doesn't need parsing because id integer value but ID String value
e)	line	f)

String student="Johan Michael";
double GPA=0.0;
GPA=input.nextDouble();
system.out.println((GPA=4.5)? "Student is eligible for upgrade\n" : "Student isn't eligible for upgrade\n"));}
	1
	2
	3
	4
	5
		int counter=0,sum=0;
		do{
		while(counter<20);
		counter++;
		sum+=counter;}

error		line 3 While(counter<20);

Correction or reason		do { counter++;
		Sum+=counter; }
		While(counter<20);
		because do-while we must



more Java statements [4 Marks (1+1.25+1.75)]

a. Write ONE Java statement that assigns the sum of x and y to z and increment x by 1 after the calculation. (Assume x, y and z are properly predefined variables).

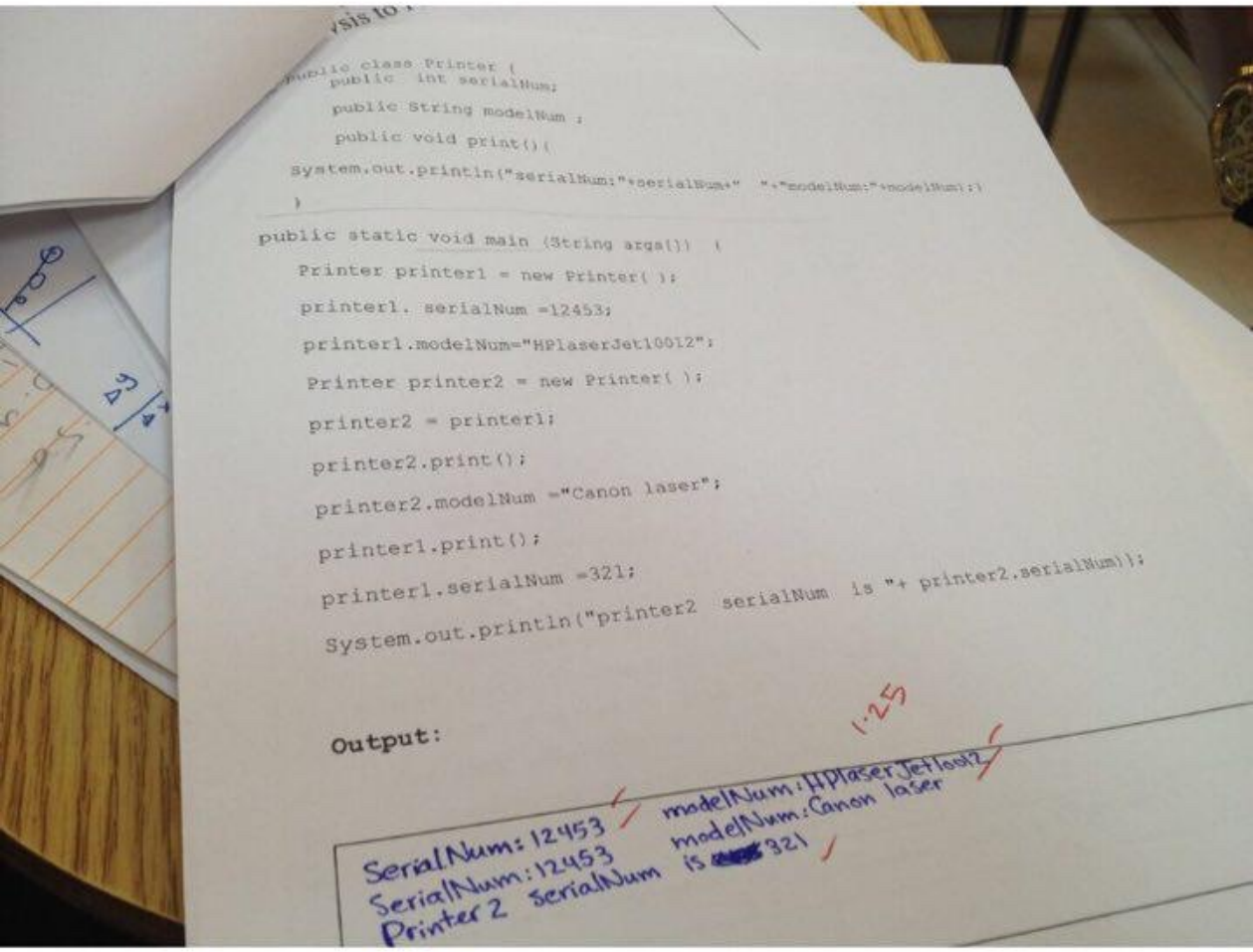
```
z = (++x) + y;
```

b. Write statements that test an integer variable (deep). If the deep is less than 8, the code should display two sentences in separated lines. The first is (Contaminated) and the second is (Shallow water). . If the deep is more than or equal to 8, the code should display (Danger) and (Deep water) in two different lines . In both cases, the sentence (No swimming allowed) should be displayed. (Assume (deep) variable is already defined).

```
int deep;
if (deep<8)
{System.out.print("Contaminated");
else
if (deep>=8)
{System.out.println("Danger");
System.out.println("Deep water");}
System.out.print("No swimming allowed");
```

c. Write a code segment that read a non zero , positive integer from the user and print the multiplica table of number 5 from 1 up to that entered number , if the user entered a zero or a negative num will not print the multiplication table..

```
Scanner input = new Scanner (System.in);
System.out.print ("enter the num");
int num = input.nextInt();
for (int i=1 ; num>0 ; i++);
multipication = num*5 ;
System.out.println(anm);
if (num<0 || num ==0)
break;
```



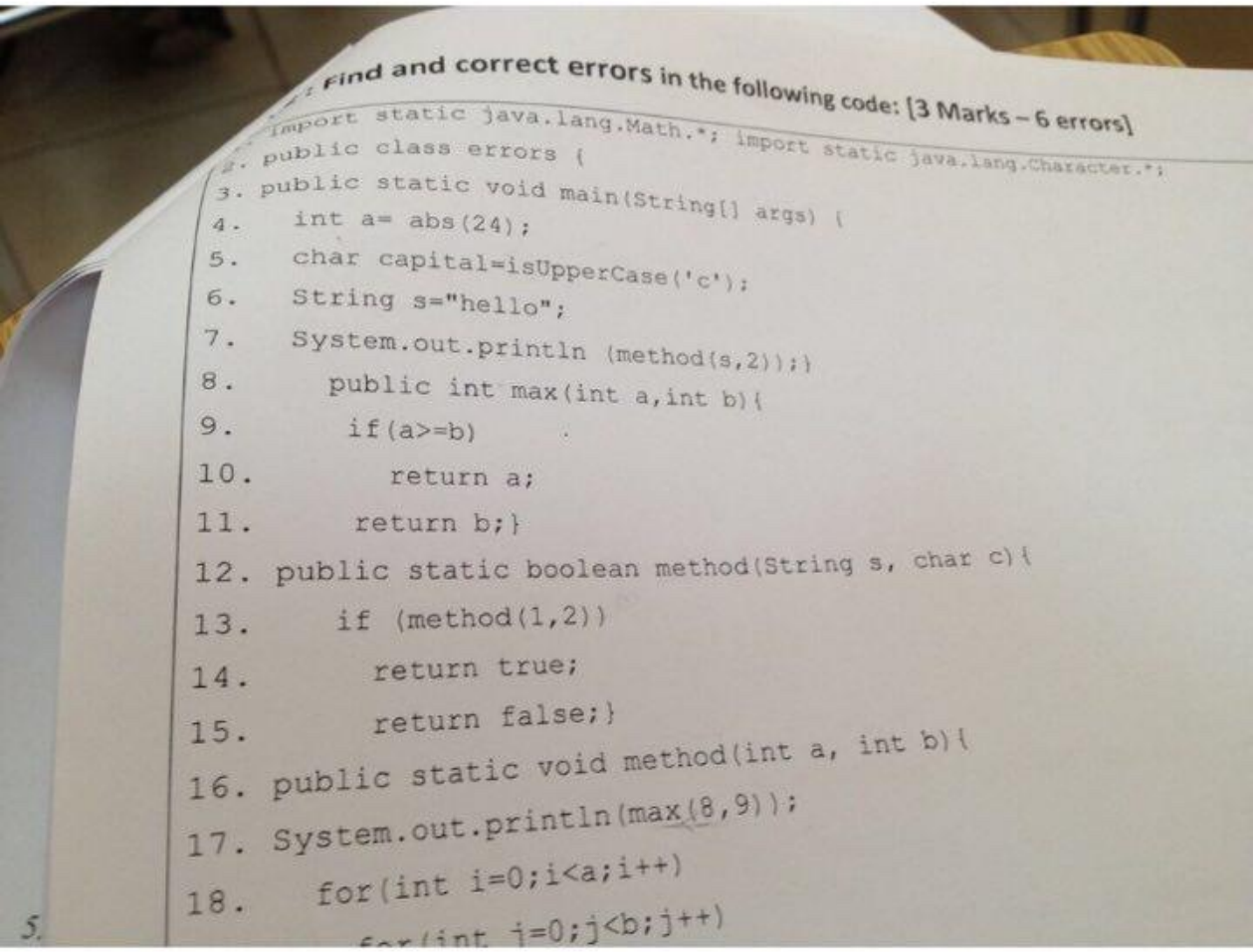
```
public class Printer {
    public int serialNum;
    public String modelNum ;
    public void print(){
System.out.println("serialNum:"+serialNum+"  "+"modelNum:"+modelNum);}
}

public static void main (String args[]) {
    Printer printer1 = new Printer( );
    printer1. serialNum =12453;
    printer1.modelNum="HPlaserJet10012";
    Printer printer2 = new Printer( );
    printer2 = printer1;
    printer2.print();
    printer2.modelNum ="Canon laser";
    printer1.print();
    printer1.serialNum =321;
    System.out.println("printer2  serialNum  is "+ printer2.serialNum);

Output:

SerialNum: 12453   modelNum: HPlaserJet10012
SerialNum: 12453   modelNum: Canon laser
Printer 2 serialNum is 321
```

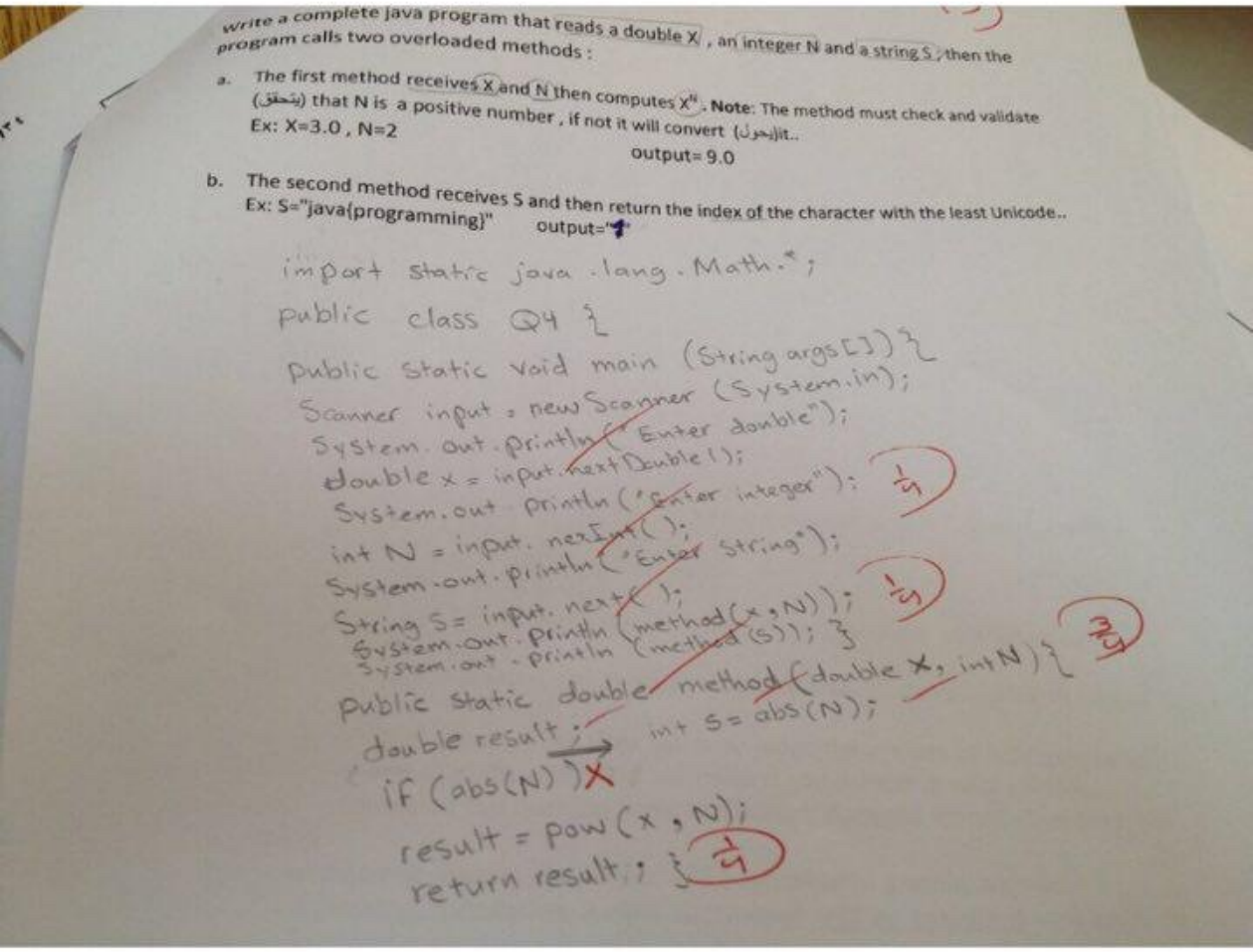
1·25



Find and correct errors in the following code: [3 Marks – 6 errors]

```
1. import static java.lang.Math.*; import static java.lang.Character.*;
2. public class errors {
3. public static void main(String[] args) {
4.    int a= abs(24);
5.    char capital=isUpperCase('c');
6.    String s="hello";
7.    System.out.println (method(s,2));}
8.      public int max(int a,int b){
9.       if(a>=b)
10.        return a;
11.      return b;}
12. public static boolean method(String s, char c){
13.     if (method(1,2))
14.       return true;
15.       return false;}
16. public static void method(int a, int b){
17. System.out.println(max(8,9));
18.    for(int i=0;i<a;i++)
         for(int j=0;j<b;j++)
```

5.



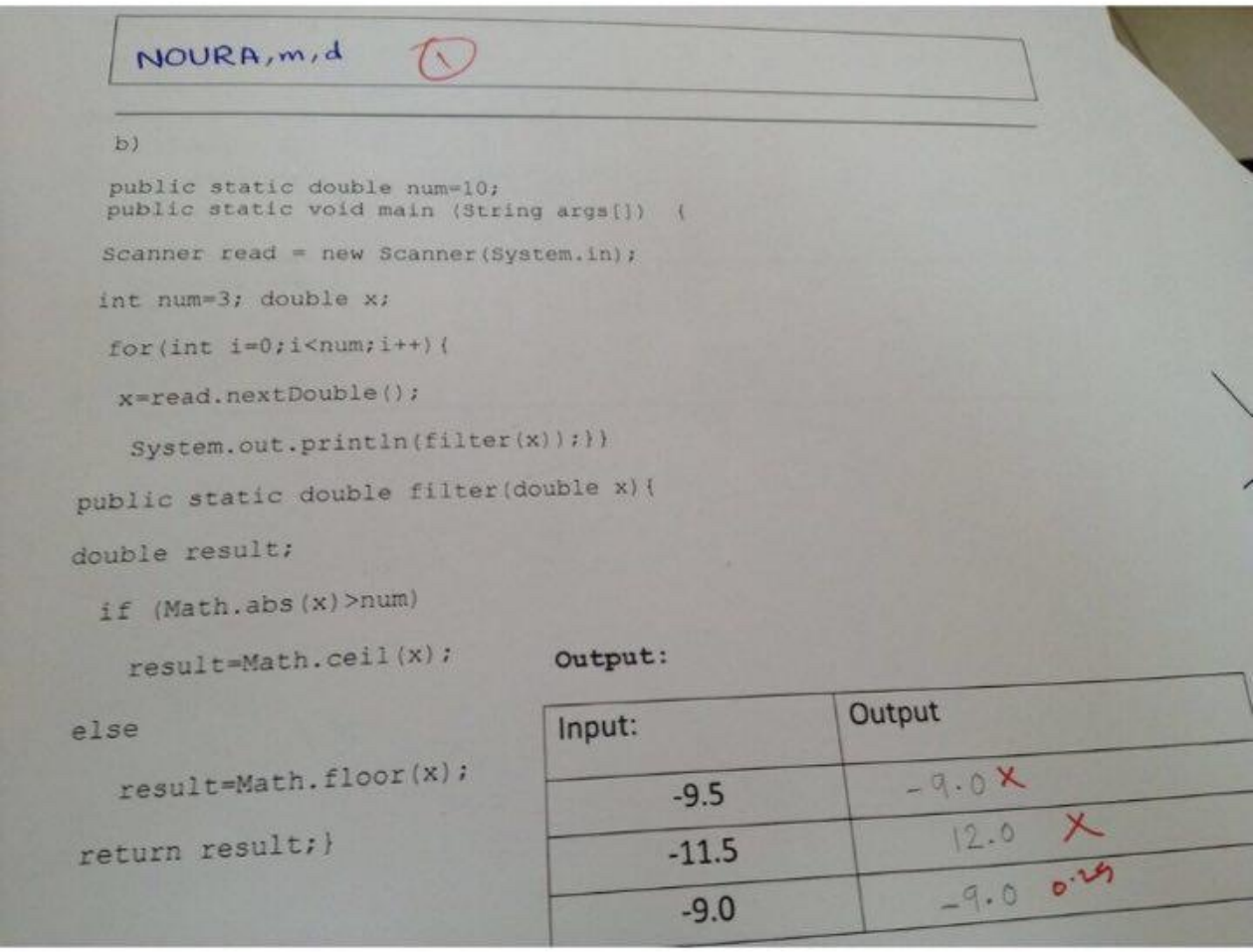
write a complete java program that reads a double X , an integer N and a string S ; then the program calls two overloaded methods :

a. The first method receives X and N then computes X^N . **Note**: The method must check and validate (يتحقق) that N is a positive number , if not it will convert (يحول)it..
Ex: X=3.0 , N=2 output= 9.0

b. The second method receives S and then return the index of the character with the least Unicode..
Ex: S="java{programming}" output="1"

```
import static java.lang.Math.*;
public class Q4 {
public static void main (String args[]){
Scanner input = new Scanner (System.in);
System.out.println("Enter double");
double x = input.nextDouble();
System.out.println("Enter integer");
int N = input.nextInt();
System.out.println("Enter string");
String S= input.next();
System.out.println(method(x,N));
System.out.println(method(S)); }
public static double method(double X, int N){
double result;
int S= abs(N);
if (abs(N))X
result = pow(x,N);
return result; }
```

1/4 1/4 3/4 1/4



NOURA,m,d (1)

b)

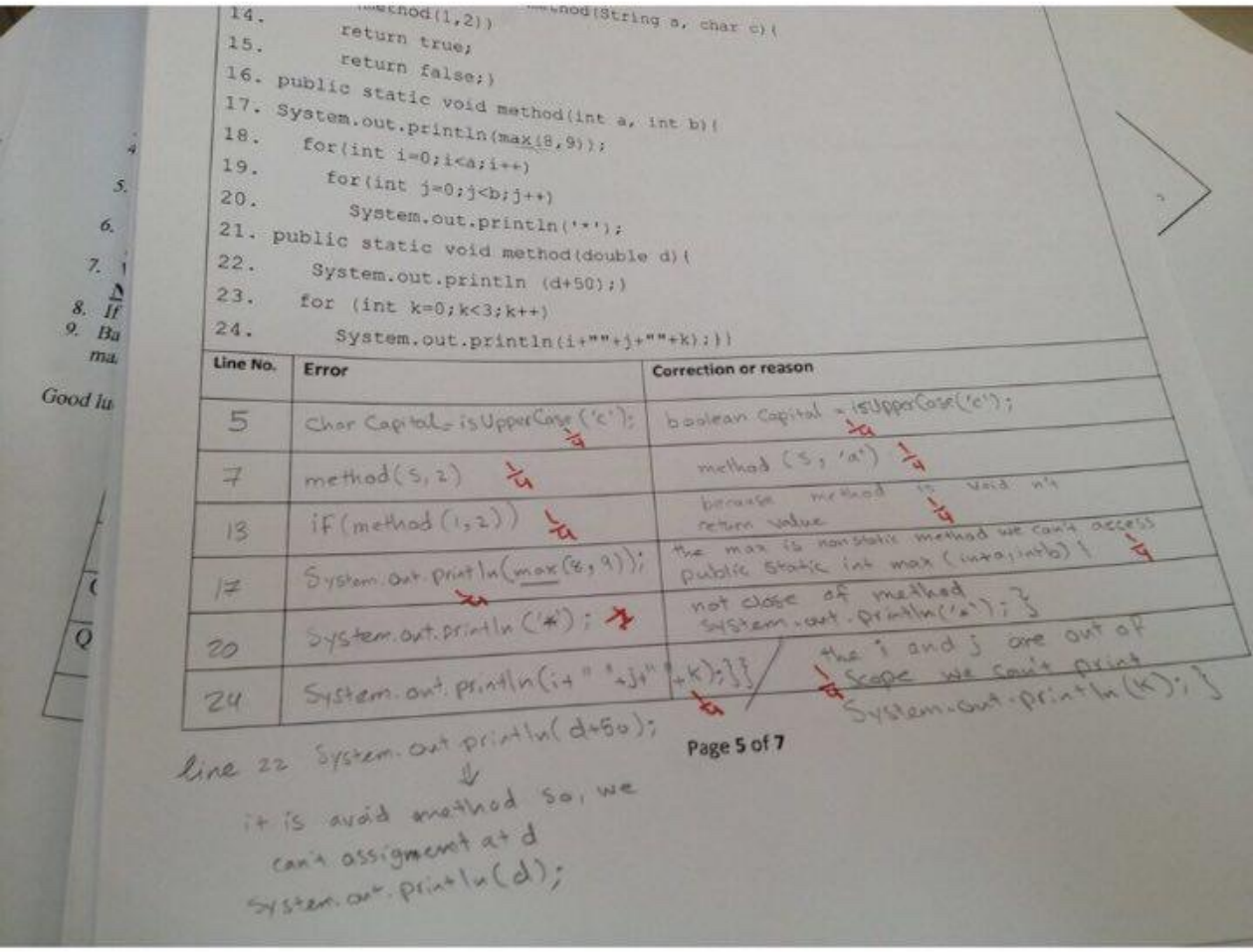
```
public static double num=10;
public static void main (String args[])  {
Scanner read = new Scanner(System.in);
int num=3; double x;
 for(int i=0;i<num;i++){
  x=read.nextDouble();
   System.out.println(filter(x));}}
public static double filter(double x){
double result;
 if (Math.abs(x)>num)
   result=Math.ceil(x);
else
   result=Math.floor(x);
return result;}
```

Output:

Input:	Output
-9.5	-9.0 X
-11.5	12.0 X
-9.0	-9.0 0.5

Lama AlQassim

Voice Message



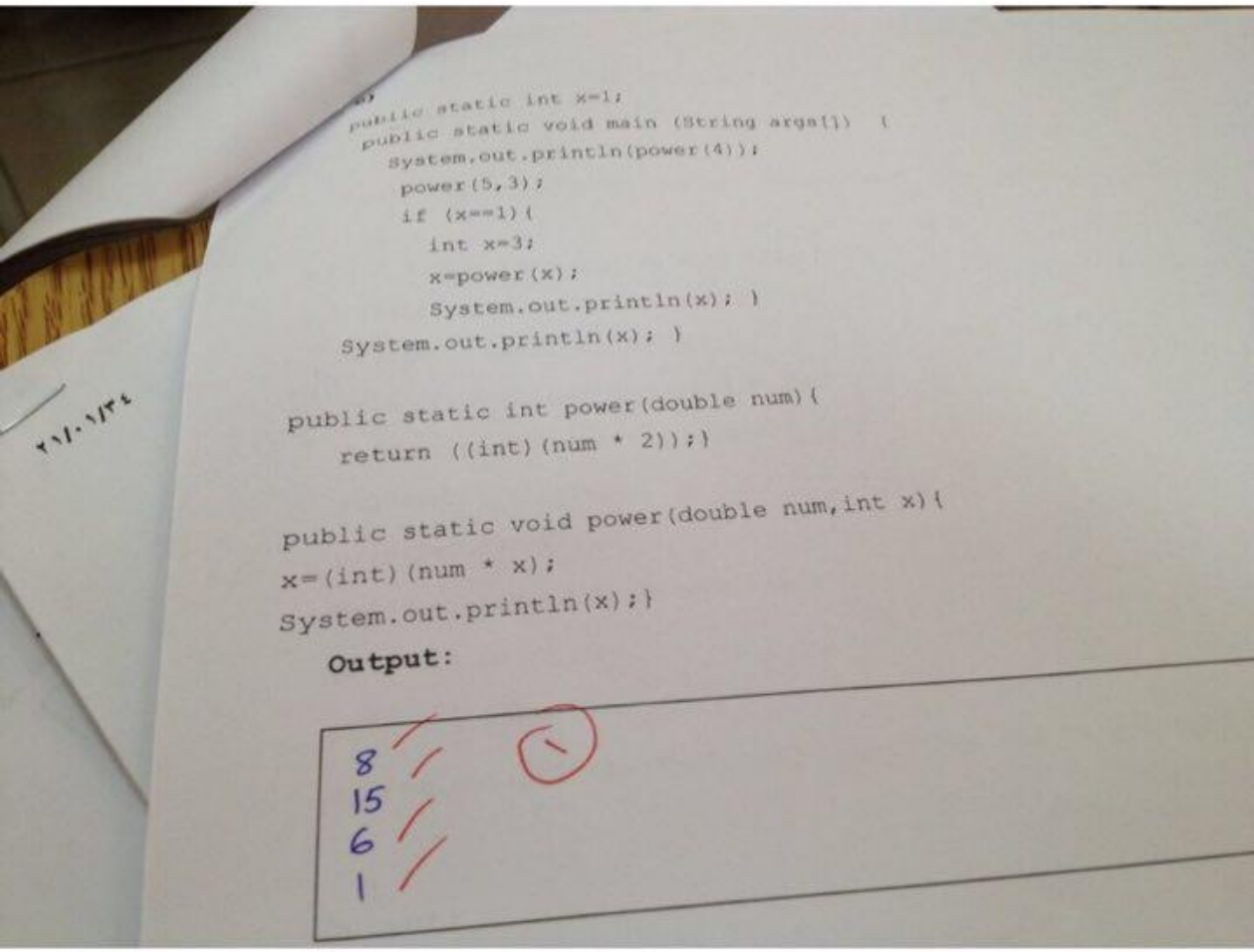
```
14.        method(1,2))          method(String a, char c){
15.          return true;
16.          return false;}
17.  public static void method(int a, int b){
18.  System.out.println(max(8,9));
19.    for(int i=0;i<a;i++)
20.      for(int j=0;j<b;j++)
21.        System.out.println('*');
22.  public static void method(double d){
23.    System.out.println (d+50);}
24.    for (int k=0;k<3;k++)
25.      System.out.println(i+""+j+""+k);}}
```

Line No.	Error	Correction or reason
5	Char Capital = isUpperCase('c');	boolean Capital = isUpperCase('c');
7	method(5,2)	method (5, 'a')
13	if(method(1,2))	because method is void it's return value
17	System.out.println(max(8,9));	the max is nonstatic method we can't access public static int max (int a, int b) {
20	System.out.println('*');	not close of method System.out.println('*'); }
24	System.out.println(i+" "+j+" "+k);}}}	the i and j are out of Scope we can't print System.out.println(k); }

line 22 System.out.println(d+50);

it is avoid method so, we can't assignment at d

System.out.println(d);



```
public static int x=1;
public static void main (String args[]) {
  System.out.println(power(4));
   power(5,3);
   if (x==1){
     int x=3;
     x=power(x);
     System.out.println(x); }
System.out.println(x); }

public static int power(double num){
   return ((int)(num * 2));}

public static void power(double num,int x){
x=(int)(num * x);
System.out.println(x);}
```

Output:

8
15
6
1

Q2: Find and correct errors in the following code segments (1 error each): [4 pts.] (0.5 find e 0.5 correct the error)

Line	a)	Line	b)
1	`final int DAYS_OF_MONTH= 31;`	1	`String str="CSC111";`
2	`Scanner input = new Scanner(System.in);`	2	`char c='S';`
3	`String nameOfMonth;`	3	`System.out.print(str.indexOf(c)`
4	`nameOfMonth=input.next();`	4	`System.out.print(str.charAt(2.5)`
5	`if(nameOfMonth.equals("February"))`	5	
6	`DAYS_OF_MONTH= 28;`		
Error	line 5	Error	line 4
Correction or Reason	if (nameOfmonth=="February") (==) → Right one	Correction or Reason	charAt(int) charA(2)

Line	c)	Line	d)
1	`int num=520;`	1	`int x=5;`
2	`double x=92.67;`	2	`if(!x<2)`
3	`String str= "Computer Science";`	3	`System.out.println(x);`
4	`System.out.printf("%d%.2f%s%n",num,str, x);`	4	`else x++;`
Error	(line 4) .2f% not for string	Error	line 2
Correction or Reason	System.out.printf("%d.%s .%2f%n", num, str, x);	Correction or Reason	if(!(x<2))

Q2: Find and correct errors in the following code segments (1 error each): [4 pts.] (0.5 find e 0.5 correct the error)

Line	a)	Line	b)
1	`final int DAYS_OF_MONTH= 31;`	1	`String str="CSC111";`
2	`Scanner input = new Scanner(System.in);`	2	`char c='S';`
3	`String nameOfMonth;`	3	`System.out.print(str.indexOf(c));`
4	`nameOfMonth=input.next();`	4	`System.out.print(str.charAt(2.5));`
5	`if(nameOfMonth.equals("February"))`	5	
6	`DAYS_OF_MONTH= 28;`		
Error	line 5	Error	line 4
Correction or Reason	if (nameOfmonth=="february") (==) → Right one	Correction or Reason	charAt(int) charA(2)

Line	c)	Line	d)
1	`int num=520;`	1	`int x=5;`
2	`double x=92.67;`	2	`if(!x<2)`
3	`String str= "Computer Science";`	3	`System.out.println(x);`
4	`System.out.printf("%d%.2f%s%n",num,str, x);`	4	`else x++;`
Error	(line 4) .2f% not for string	Error	line 2
Correction or Reason	System.out.printf("%d.%s .%2f%n", num, str, x);	Correction or Reason	if(!(x<2))

Q1: State if the following statements are True or False: [3 pts. =0.75 each]

Statement	True/False
We can specify array size by either declaring it as a constant or reading it from the user during program execution.	T ✓
The continue statement skips the remaining statements inside the loop; and proceeds with the next iteration, if any.	T ✓
In void method, we can use break statement to exit early.	F ✓
If the number of required iterations is not known, and the loop should execute at least once, then we must use a ***while*** loop. do while	T ✗

(1 Found) -0.75