Group A

1. A do-while loop is executed:

    At least once
    At least twice
    At most once

2. What can be done using one type of loop can also be done using the other two types of loops, True or False? Justify your answer.

3. Write an equivalent while() loop for the following for() loop

```
int s=0;
for(int x=1; x<=25; x+=2)
s+=x;
```

Group B

1. Write a program to print numbers from 1 to 10.
2. Write a program to calculate the sum of first 10 natural number.
3. Write a program that prompts the user to input a positive integer. It should then print the multiplication table of that number.
4. Write a program to find the factorial value of any number entered through the keyboard.
5. Two numbers are entered through the keyboard. Write a program to find the value of one number raised to the power of another. (Do not use Java built-in method) [Home Task]
6. Write a program to enter the numbers till the user wants and at the end it should display the count of positive, negative and zeros entered.

7. Write a program to print Fibonacci series of n terms where n is input by user:
   0 1 1 2 3 5 8 13 24 .....
8. Write a program to print following:

i)

```
    *
   ***
  *****
 *******
*********
```

ii)

```
    1
   222
  33333
 4444444
555555555
```

iii)

```
    1
   212
  32123
 4321234
543212345
```

[HomeTask]

Group C

1. Write a program that:
(a) Uses a loop to add up all the even numbers between 100 and 200, inclusive.
Sums a series of (positive) integers entered by the user, excluding all numbers that are Greater than 100.
(c) Solves (a) but this time using an infinite loop, break and continue statements.
(d) Prompts the user to enter any number of positive and negative integer values, then
Displays the number of each type that were entered. [HomeTask]

2. The following while loop is meant to multiply a series of integers input by the user, until a sentinel value of 0 is entered. Indicate any errors in the code given. See if you can fix the program and get it running.

```
public class Main {
public static void main(String[] args) {
int num;
int product = 1;
String a = System.console().readLine("Enter first number");
num = Integer.parseInt(a);
while (num != 0) {
a = System.console().readLine("Enter first number");
num = Integer.parseInt(a);
product = product * num;
}
System.out.printf("product = %d", product);
}
}
```

3. For each of the following, indicate which a definite loop is, and which an indefinite loop, Explain your reasoning.

(a)

```
public class Main {
public static void main(String[] args) {
int num;
String a = System.console().readLine("Enter a non-zero value:");
num = Integer.parseInt(a);
while (num == 0) {
a = System.console().readLine("Enter a non-zero value:");
num = Integer.parseInt(a);
}
}
}
```

(b)

```
public class Main {
public static void main(String[] args) {
int n = 0;
while (n < 10){
System.out.printf("%f\n", Math.pow(2, n));
n = n + 1;
}
}
}
```

Group D

1. Write a program that determines how many of each coin a vending machine should dispense for
Different amounts of change. You should print a row for each value of change between 0 and 99 and
Columns for the change required. [HomeTask]
For example, the start of the table should look like the following:

Change	50p	20p	10p	5p	2p	1p
0	0	0	0	0	0	0
1	0	0	0	0	0	1
2	0	0	0	0	1	0
3	0	0	0	0	1	1
4	0	0	0	0	2	0
5	0	0	0	1	0	0

2. Write a program to compute the cosine of x. The user should supply x and a positive integer n. We compute the cosine of x using the series and the computation should use all terms in the series up through the term involving x^n
$\cos x = 1 - x^2/2! + x^4/4! - x^6/6!$ ..... [HomeTask]s