Group A

1. What is the String class in Java? Is String a data type?
   = String class is variable class which is used to store character data such as ABC. No, the string is not a data type.

2. How can you make a String upper case or lower case in Java?
   = We can make a String uppercase or lowercase by using Uppercase() and Lowercase() data types.

3. Can you use String in switch case in Java? Explain it briefly.
   = Yes, we can use a switch statement with Strings in Java. While doing so you need to keep the following points in mind. It is recommended to use String values in a switch statement if the data you are dealing with is also Strings.

4. Explain different types of conditional statement in java.
   = The different types of condition statements are:
   i.   If-The if statement is the decision making statement that guides the program to make decision based on the given criteria.
   ii.   If/else-The if/else statement executes a block of code if a specified condition is true.

5. What is the value of the variable num after the following is executed?

   o   int k = 5;
   o   int num = 0;
   o   int num1 = num + k * 2;
   o   int num2 = num + k * 2;

   Are the values num1 and num2 equal after the last statement?

```
import java.util.Scanner;
public class integers{
    public static void main(String[] args){
        int k=5;
        int num=0;
        int num1=num  + k*2;
        int num2=num +k*2;
        System.out.println("the value of variable num1 after the following is executed is " +num1);
        System.out.println("the value of variable num2 after the following is executed is " +num2);
        if(num==num2){
            System.out.println("yes the value of variable num1 and num2 are equal after the last statement");}
            else if (num1 !=num2)
            System.out.println("no the value of variable num1 and num2 are not equal");
        }
    }
```

Output:

```
the value of variable num1 after the following is executed is 10
the value of variable num2 after the following is executed is 10
```

6.How do you split a string in Java?

= The string split () method is used to split string in Java.

7.How do you check if two Strings are equal in Java?
= The ava string equal () method is used to check if two strings are equal in java.

Group B

1. Find the difference between Beth's age (57) and Tom's age (34).

=

```
import java.util.Scanner;
public class firstage{
    public static void main(String[] args){
        int bethsage=57;
        int tomsage=34;
        int age=bethsage-tomsage;
        System.out.println("the age difference is " +age);
    }
}
```

Output:

```
the age difference is 23
```

2. Develop a system to store your name as variable.

=

```java
import java.util.Scanner;
public class myname{
    public static void main(String[] args){
        String Firstname="Naomi";
        String Lastname="Thing";
        System.out.println("Your name is " +Firstname+Lastname);
    }
}
```

Output:

```
Your name is NaomiThing
```

3. Create the above java program in the java environment and then modify the program to use the following statements. Note down the response to each. Do they differ from what you would expect?

   ❖ boolean result = true && true;
   ❖ boolean result = true && false || true;
   ❖ boolean result = false && false || true;
   ❖ boolean result = false && 0;
   ❖ boolean result = !(false) && true;
   ❖ boolean result = !(true && !(false &&
   ❖ false));
   ❖ boolean result = (10 > 14) and (4 == 5);
   ❖ boolean result = true && 5;
   ❖ boolean result = (3 * 4) != (14 - 2) && ('C' >= 'D');
       boolean result = (12 * 2) == (3 * 8);
   ❖ boolean result = (14 * 2) != (3 * 8);

```java
import java.util.Scanner;
public class booleanexpre{
    public static void main(String[] args){
        boolean result=true&&true;
        System.out.println("the boolean result is " +result);
        boolean result1=true&&false||true;
        System.out.println("the boolean result is " +result1);
        boolean result2=false&&false||true;
        System.out.println("the boolean result is " +result2);
        boolean result3=!(false)&&true;
        System.out.println("the boolean result is " +result3);
        boolean result4=!(true&&!(false&&false));
        System.out.println("the boolean result is " +result4);
    }
}
```

Output:

```
the boolean result is true
the boolean result is true
the boolean result is true
the boolean result is true
the boolean result is false
```

3. Find the difference between 7 factorial and 5 factorial.

```java
import java.util.Scanner;
public class factorial{
    public static void main(String[] args){
        int i, num=5, num1=7, fact=1, fact1=1, diff;
        for(i=1;i<=num;i++){
            fact=fact*i;
        }
        System.out.println("the factorial is" +fact);
        for (i=1; i<=num1;i++){
            fact1=fact1*i;
            System.out.println("the factorial is" +fact1);
        }
        diff=fact1-fact;
        System.out.println("the difference is" +diff);
    }
}
```

Output:

```
the factorial is120
the factorial is1
the factorial is2
the factorial is6
the factorial is24
the factorial is120
the factorial is720
the factorial is5040
the difference is4920
```

4. Complete the following questions by taking user input. o
   Write a Java program that prompts a user for their last
   name and stores it in a variable named last_name.

```java
import java.util.Scanner;
public class lastname{
    public static void main(String[] args){
        Scanner sc=new Scanner(System.in);
        System.out.print("enter the last name");
        String lastname=sc.nextLine();
        System.out.println("the last name is " +lastname);
    }
}
```

Output:
```
enter the last nameThing
the last name is Thing
```

o Give an instruction that prompts a user for their age and stores it
   as an integer in a variable named age.

```java
import java.util.Scanner;
public class age{
    public static void main(String [] args){
        Scanner sc=new Scanner(System.in);
        System.out.print("enter the age");
        int age=sc.nextInt();
        System.out.print("age is" +age);
    }
}
```

Output:
```
enter the age19
age is19
```

o Give an instruction that prompts a user for their temperature and

stores it as a float in a variable named current_temperature.

```java
import java.util.Scanner;
public class temperature{
    public static void main(String[] args){
        Scanner input=new Scanner(System.in);
        System.out.print("enter the temperature");
        int temperature=input.nextInt();
        System.out.println("the temperature now is"+temperature);
    }
}
```

Output:
```
enter the temperature60
the temperature now is60
```

6. Give a call to printf that is provided one string that displays the following address on three separate lines:
   o John Doe
   o 123 Dudley Street
   o 123 Dudley Street

```java
import java.util.Scanner;
public class address{
    public static void main(String[] args){
        String address="John Doe";
        String address1="123 John Duldey St.";
        System.out.printf("%s%n", address);
        System.out.printf("%s%n", address1);

    }
}
```

Output:
```
John Doe
123 John Duldey St.
```

7. Write a java program in which:
   a) The user enters either 'A', 'B', or 'C'. If 'A' is entered, the program should display the word 'Apple'; if 'B' is entered, it displays 'Banana'; and if 'C' is entered, it displays 'Coconut'. Use nested if statements for this.

```java
import java.util.Scanner;
public class nestedifelse{ //displaying words using nested if-else statement\\
    public static void main(String[] args){
        String response;
        Scanner sc=new Scanner(System.in);
        System.out.println("enter 1 letter between a,b or c");
        response=sc.nextLine();
        if(response==("a")||response==("A")){
            System.out.println("apple");//a or A = apple\\
        }
        else if(response==("b")||response==("B")){
            System.out.println("banana");//b or B = banana\\
        }
        else if(response==("c")||response==("C")){
            System.out.println("coconut");//c or C = coconut\\
        }
        else{
            System.out.println("invalid");
        }
    }
}
```

Output:

b) Repeat question **(a)** using an (if statement with "else if" pairs) instead.

c) A student enters the number of college credits earned. If the number of credits is greater than or equal to 90, 'Senior Status' is displayed; if greater than or equal to 60, 'Junior Status' is displayed; if greater than or equal to 30, 'Sophomore Status' is displayed; else, 'Freshman Status' is displayed.

```java
import java.util.Scanner;
public class creditearned{
    public static void main(String[] args){
        Scanner sc=new Scanner(System.in);
        System.out.print("enter the number of credit");
        int cre=sc.nextInt();
        if(cre>=90){
            System.out.println("senior status");
        }
        else if (cre>=60){
            System.out.println("junior status");
        }
        else if (cre>=30){
            System.out.println("Sophmore Status");
        }
        else{
            System.out.println("freshman status");
        }
    }
}
```

Output:

```
enter the number of credit20
freshman status
```

Group C

1. Create a Java software that will ask the user for a number and then display whether it is positive or negative.

```java
import java.util.Scanner;
public class positiveornegative{
    public static void main(String[] args){
        Scanner sc=new Scanner(System.in);
        System.out.print("enter a number");
        int n=sc.nextInt();
        if (n>0){
            System.out.println("the given number "+n+"  is positive");
        }
        else if(n<0){
            System.out.println("the given number "+n+" is negative");
        }
        else{
            System.out.println("the given number "+n+" is neither positive nor negative");
        }
    }
}
```

Outpur:

```
enter a number12
the given number 12  is positive
```

2. Your name left justified 15 spaces. [Formatted Output]

```java
import java.util.Scanner;
public class lastnamejustified{
    public static void main(String[] args){
        String name="Naomi Thing";
        System.out.printf("enter the name=%-30s", name);
    }
}
```

OUTPUT:

```
enter your name=Naomi Thing
```

3. Your name right justified 15 spaces. [Formatted Output]

```java
import java.util.Scanner;
public class myname{
    public static void main(String[] args){
        String Firstname="Naomi";
        String Lastname="Thing";
        System.out.println("Your name is " +Firstname+Lastname);
    }
}
```

OUTPUT:

```
what is your name?                    Naomi Thing
```

4. There were bunch of students who were curious about their total marks, percentage and grade using the marks from five subjects as input. Develop a system to help them find their grades.

```java
import java.util.Scanner;
public class findinggrades{
    public static void main(String[] args){
        Scanner sc=new Scanner(System.in);
        double s1,s2,s3,s4,s5;
        double p;
        String G;//declare variable use in our program//
        System.out.print("enter the marks you obtain in social");
        s1=sc.nextDouble();
        System.out.print("enter the marks you obtain in nepali");
        s2=sc.nextDouble();
        System.out.print("enter the marks you obtain in computer");
        s3=sc.nextDouble();
        System.out.print("enter the marks you obtain in english");
        s4=sc.nextDouble();
        System.out.print("enter the marks you obtain in math");
        s5=sc.nextDouble();
        double total=s1+s2+s3+s4+s5;
        System.out.println("the total marks of the 5 subjects is" +total);
        p=(total/500)*100;
        System.out.println("the percentage from the 5 subjects is" +p);
```

```java
if (p<100&&p>90){
    System.out.println("outstanding performance! you got A+ grade");
}
else if(p<90&&p>80){
    System.out.println("excellent!! you obtained A grade");
}
else if(p<80&&p>70){
    System.out.println("very good. you got B+ grade");
}
else if(p<70&&p>60){
    System.out.println("good. you got B grade");
}
else if(p<60&&p>40){
    System.out.println("nice. you got C+ grade");
}
else{
    System.out.println("give your best next time");
}
}
}
```

OUTPUT:

```
enter the marks you obtain in social56
enter the marks you obtain in nepali73
enter the marks you obtain in computer45
enter the marks you obtain in english66
enter the marks you obtain in math87
the total marks of the 5 subjects is327.0
the percentage from the 5 subjects is65.4
good. you got B grade
```

5. Write a Java program that allows the user to enter two integer values and displays the results with the following arithmetic operators applied to them. For example, if the user enters the values 7 and 5, the output would be:

- o Addition: 7 + 5 = 12
- o Subtraction: 7 – 5 = 2
- o Multiplication: 7 * 5 = 35
- o Division: 7 / 5 = 1.40
- o Modulus: 7 % 5 = 2
- o Exponentiation: 7 ** 5 = 16,807

[All floating-point results should be displayed with two decimal places of accuracy and with commas where appropriate.]

```java
import java.util.Scanner;
public class integeroperation{
    public static void main(String[] args){
        double c,d,sum,diff,multi;//a for first integer and b for second integer//
        double div,modu;//div shows division and modu shows modulus//
        Scanner sc=new Scanner(System.in);
        System.out.println("enter 1st integer");
        c=sc.nextDouble();
        System.out.println("enter 2nd integer");
        c=sc.nextDouble();
        d=sc.nextDouble();
        sum=c+d;
        diff=c-d;
        multi=c*d;
        div=c/d;
        modu=c%d;
        System.out.println("the sumn of 2 integers is" +sum);
        System.out.println("the difference of 2 integers is" +diff);
        System.out.println("the multiplication of 2 integers is" +multi);
        System.out.println("the division of 2 integers is" +div);
        System.out.println("the modulus of 2 integers is" +modu);
    }
}
```

OUTPUT:

```
enter 1st integer
1
enter 2nd integer
2
6
the sumn of 2 integers is8.0
the difference of 2 integers is-4.0
the multiplication of 2 integers is12.0
the division of 2 integers is0.33333333333333333
the modulus of 2 integers is2.0
```

6. Let's create a java program to input a number and check whether it is a Buzz number or not. A number is said to be a buzz number when it ends with 7 or is divisible by 7.

7. Let's take an example program where we will take the age of user as input and find whether he is a child, adult, or senior on the basis of age. Using Java if-else-if ladder statements.

```java
import java.util.Scanner;
public class agetype{
    public static void main(String[] args){
        int age;
        Scanner sc=new Scanner(System.in);
        System.out.print("enter your age");
        age=sc.nextInt();
        if(age<=18){
            System.out.println("You are a child");
        }
        else if(age>18&&age<=60){
            System.out.println("You are an adult");
        }
        else if (age>=60){
            System.out.println("You are a senior citizen");
        }
    }
}
```

OUTPUT:
```
enter your age19
You are an adult
```

8. Bruno Mars just appeared his examination and got 75%. He goes to his tutor and asks his grade. Now being a tutor you need to develop a program which tells his grade.

```java
import java.util.Scanner;
public class wedonttalkaboutbruno{
    public static void main(String[] args){
        int pe=75;//pe refers to percentage\\
        if(pe>=70){
            System.out.println("Congratulations! Your grade is A");
        }
        else if(pe<70||pe>=60){
            System.out.println("Great!! You obtained B");
        }
        else{
            System.out.println("You got grade C. Keep Going!");
        }
    }
}
```

Output:

```
Congratulations! Your grade is A
```

9. If a customer wants to take a t-shirt from your shop and he wants to buy a t-shirt and feeds in his/her size. Then print the availability as per their preference. [Using Switch Case Statement].

```java
import java.util.Scanner;
public class tshirt{
    public static void main(String[] args){
        Scanner sc=new Scanner(System.in);
        String size="X,XL";//they are different size of the tshirt\\
        System.out.println("which size of tshirt do you want?");
        size=sc.next();
        switch(size){//lets apply switch case\\
            case"X":{
                System.out.println("the cost for Xsize is :300");
                break;
            }
            case"XL":{
                System.out.println("the cost for XLsize is :400");
                break;
            }
            default:{
                System.out.println("Not available");
            }
        }
    }
}
```

Output:

```
which size of tshirt do you want?
XL
the cost for XLsize is :400
```

Group D

1. Let's create a printing application program where we will take the number

of copies to be printed as input from the user and then prints the price per copy and the total price for the printing copies.

The chart price to print the number of copies is given below:

- 0 – 99 : $0.30 per copy
- 100 – 499 : $0.28 per copy
- 500 – 799 : $0.27 per copy
- 800 – 1000 : $0.26 per copy
- over 1000 : $0.25 per copy

```java
import java.util.Scanner;
public class applicprogram{
    public static void main(String[] args){
        double n,T,T1,T2,T3,T4,T5;//T as total price=total cost of (0-99),T1 as total cost of copies (100-499)
        //T2 as total cost of copies (500-799), T3 as total cost of copies (800-1000) and T4 for copies costing more than 1000\\
        Scanner sc=new Scanner(System.in);
        System.out.println("how many do you want to photocopy");
        n=sc.nextInt();
        if(n>=0&&n<99){
            T=n*0.30;
            System.out.println("your total cost of all copies is " +T+"$");
        }
        else if(n>=100&&n<499){
            T1=n*0.28;
            System.out.println("your total cost of all copies is " +T1+"$");
        }
        else if(n>500&&n<799){
            T2=n*0.27;
            System.out.println("your total cost of all copies is " +T2+"$");
        }
        else if(n>=800&&n<1000){
            T3=n*0.26;
        else if(n>=800&&n<1000){
            T3=n*0.26;
            System.out.println("your total cost of all copies is " +T3+"$");
        }
        else if(n>=1000){
            T4=n*0.25;
            System.out.println("your total cost of all copies is " +T4+"$");
        }
    }
}
```

Output:

```
how many do you want to photocopy
98
your total cost of all copies is 29.4$
```

2. Follow the simulation of Floor example from lecture slide and develop a system where you need to ask user the floor number. Also determine whether the floor is actual floor or not.

3. [Scenario] You're waiting at a station and the announcer has just broadcast that your train is going to be **13445** seconds late. You need to work out in understandable terms what that means. You assume this is going to be quite a long time so you whip out your laptop to write a program to convert the seconds into hours, minutes and seconds, aiming to maximize readability by giving priority to the largest units, i.e. the resulting seconds and minute's values must not be greater than 60.

You will need four variables to hold: the total number of seconds; the number of hours; the number of minutes; and the number of remaining seconds. The example output should look something like this:

13442 Seconds is: 3 Hours, 44 Minutes and 5 Seconds.