Bridge course Day 2

Section 1: Operators

1.Problem Statement: Declare an int variable myAge and assign your age to it. Write expressions using comparison operators to check if

- myAge is equal to 25
- myAge is greater than 18
- myAge is less than or equal to 65
- myAge is not equal to 30.

Print the Boolean result of each expression using System.out.println().

Algorithm
Step 1: Start
Step 2: Taking input from the user (myage)
Step 3: Comparing the input with the conditions
Step 4: Print "true" if condition is satisfied else "false" using logical and ternary operator
Step 5: End

Pseudo code:
Start
  Input age
  Condition for 18
    Print output
  Condition for 25
    Print output
  Condition for 30
    Print output
  Condition for 65
    Print output
End

CODE:

```
package operators;
import java.util.Scanner;
public class Operator1 {

	public static void main(String[] args) {
		boolean res=false;
		Scanner sc= new Scanner(System.in);
		System.out.println("enter your age: ");
		int myage=sc.nextInt();
		res=(myage>18)?true:false;
				System.out.println(res+" for age greater than 18");
		res=(myage==25)?true:false;
				System.out.println(res+" for age is equal to 25");
		res=(myage!=30)?true:false;
			System.out.println(res+" for age is not equal to 30");
		res=(myage<=65)?true:false;
				System.out.println(res+" for age less than 65");
}
}
```

TC 1: age=18

```
enter your age:
18
false for age greater than 18
```


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```
false for age is equal to 25
true for age is not equal to 30
true for age less than 65
```

TC 2: age=45

```
enter your age:
45
true for age greater than 18
false for age is equal to 25
true for age is not equal to 30
true for age less than 65
```

TC 3: age=67

```
enter your age:
67
true for age greater than 18
false for age is equal to 25
true for age is not equal to 30
false for age less than 65
```

Observation: The results of the program is a Boolean value where the output is true for the values that satisfied by the condition or else its false.

2.Problem Statement: Declare two String variables: username = "admin" and password = "password123". Declare two more variables enteredUsername and entered Password, and assign some test values. Write a logical expression that returns true only if both username and password match

Algorithm
Step 1: Start
Step 2: Declare 2 variables that is username and password
Step 3: Taking input from the user (username and password)
Step 4: Comparing both input values and declared values
Step 5: print true for successful login else false
Step 6: End

Pseudo code:
Start
Declaring the variables
Input variables from the user
Compare the input and declared variables
If the values are same then print true successful completed
If values are not same then invalid login
End

CODE:

```
package operators;
import java.util.Scanner;
public class Operator2 {
        public static void main(String[] args) {
                boolean res=false;
                String username="admin";
                String password="password123";
                Scanner sc=new Scanner(System.in);
                System.out.println("enter your user name");
                String enteredUsername=sc.nextLine();
                System.out.println("enter your password");
                String enteredPassword= sc.nextLine();
```

```
                if(username.equals(enteredUsername) && password.equals(enteredPassword)) {
                        res=true;
                        System.out.println("login success");
                        System.out.println(res);

                }else {
                        System.out.println("invalid login");
                        System.out.println(res);
                }
        }
}
```

TC 1: login success

```
enter your user name
admin
enter your password
password123
login success
true
```

TC 2: invalid login

```
enter your user name
aadmin
enter your password
password123
invalid login
false
```

Observation: The program works using the comparison operators where the both the input and declared string are compare and if the string are same then the results will be true else the results false.

3.Problem Statement:
Declare an int variable nurn and assign it a value.
Check whether num is:
Greater than 10 AND less than 20.
Less than 5 OR greater than 100.
Print the results.

Algorithm
Step 1: Start
Step 2: Taking input from the user (num)
Step 3: Comparing the input with the conditions
Step 4: Print output according to the condition
Step 5: End

Pseudo code:
Start
  Input num
  Condition for >10 and <20
    Print output
  Condition for <5 and >100
    Print output
   Default Print output
End

CODE:

```
package operators;
```

```java
public class NumberRange {

	public static void main(String[] args) {
		int num=5;
		if(num>10 && num<20) {
			System.out.println("the number is in the range of 10 to 20");
		}
		else if(num<5 || num>100) {
			System.out.println("the number is not in the range of 5 to 100");
		}else {
			System.out.println("number is not in the given range");
		}

	}

}
```

TC 1: num= 5

```
number is not in the given range
```

TC 2: num=15

```
the number is in the range of 10 to 20
```

TC 3: age=565

```
the number is not in the range of 5 to 100
```

Observation: The results of the program is to determine the range on the input values in the range given. That is done using the if-else conditions and logical operators.

4.Problem Statement: Given the expression: 5+3*2>10 &&!(7 == 7)
Break it down step-by-step.
Show the result after each stage of the operation and determine its final Boolean value.

Step to solve it:
5+3*2>10 && !(7==7)
5+3*2>10 && !True
5+3*2>10 && False
5+6>10 && False
11>10 && False
True && False
False

Section 2: Conditional statement

1.Problem Statement:
Get an integer input from the user using Scanner.
Write an if-else if-else structure that

- Prints "Positive" if the number is greater than 0
- Prints "Negative" if the number is less than 0.
- Prints "Zero" if the number is exactly 0

Algorithm
Step 1: Start
Step 2: Taking input from the user (num)
Step 3: Comparing the input whether it is >0 , <0 or =0

Step 4: Print output according to the condition
Step 5: End

Pseudo code:
Start
Input num
Condition for >0
Print output as positive
Condition for =0
Print output as zero
Default Print output as negative
End

CODE:

```
package conditionalStatements;
import java.util.Scanner;
public class PositiveNegative {

	public static void main(String[] args) {
		Scanner c= new Scanner(System.in);
		System.out.println("Enter an integer");
		int num=c.nextInt();
		if(num>0) {
			System.out.println("number is a positive integer");
		}else if(num==0) {
			System.out.println("number is zero");
		}else {
			System.out.println("number is a negative integer");
		}

	}

}
```

TC 1: num= 56

```
Enter an integer
56
number is a positive integer
```

TC 2: num=-15

```
Enter an integer
-15
number is a negative integer
```

TC 3: age=0

```
Enter an integer
0
number is zero
```

Observation: The results of the program is to determine whether the given input is positive or negative or zero. This can be done using simple if-else conditionals.

2.Problem Statement:
Ask the user to input their age.
Use an if-else structure to determine if they are eligible to drive (age >= 18).

Algorithm
Step 1: Start
Step 2: Taking input from the user (age)

Step 3: Comparing the input with 18
Step 4: Print output according to the condition
Step 5: End

Pseudo code:
Start
Input num
Condition for >18
Print output as eligible
Default Print output as not eligible
End

CODE:

```
package conditionalStatements;
import java.util.Scanner;
public class DrivingEligibility {

        public static void main(String[] args) {
                Scanner sc=new Scanner(System.in);
        System.out.println("enter the driver's age:");
        int age=sc.nextInt();
        if(age>=18) {
        System.out.println("eligible to drive");
        }else {
        System.out.println("Not eligible to drive");
        }
        }

}
```

TC 1: age= 20

```
enter the driver's age:
20
eligible to drive
```

TC 2: num=15

```
enter the driver's age:
15
Not eligible to drive
```

Observation: The results of the program is to determine whether the given age is greater than 18 or not. This can be done using simple if-else conditionals.

3.Problem Statement:
Get two double inputs and an operator (+,-,"./) from the user.
Use if-else if-else to perform the operation.
Handle division by zero using an if check.
Print the results.

Algorithm
Step 1: Start
Step 2: Taking input from the user (a, b and op)
Step 3: Comparing op values with operation conditions
Step 4: perform the necessary operation and print the results
Step 5: End

Pseudo code:
Start

Input num
Comparing the operator
Performing the operation
Print output
Default Print output
End

CODE:

```
package operators;
package conditionalStatements;
import java.util.Scanner;
public class SimpleCalculator {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		Scanner sc=new Scanner(System.in);
		System.out.println("enter the value of a: ");
		double a=sc.nextDouble();
		System.out.println("enter the value of b: ");
		double b=sc.nextDouble();
		System.out.println("enter the operator");
		String op=sc.next();
		double res=0;
		if(op.equals("+")) {
			res=a+b;
		}else if(op.equals("-")) {
			res=a-b;
		}else if(op.equals("*")) {
			res=a*b;
		}else if(op.equals("/")) {
			if(b!=0) {
			res=a/b;
			}else {
				System.out.println("Error:zero division rule");
			}
		}
		else {
			System.out.println("invalid operator");
		}
		System.out.println(a+" "+op+" "+b+ " = "+res);
	}

}
```

TC 1: a=12
b=14
op= -

```
enter the value of a:
12
enter the value of b:
14
enter the operator
-
12.0 - 14.0 = -2.0
```

TC 2: a=4
b=0
op= /

```
enter the value of a:
4
enter the value of b:
0
enter the operator
/
```

```
Error:zero division rule
```

TC 3: a=2
b=56
op= *

```
enter the value of a:
2
enter the value of b:
56
enter the operator
*
2.0 * 56.0 = 112.0
```

Observation: The results of the program is to determine the output of the given operator and numbers as like the calculator. That is done using the if-else conditions and logical operators.

4.Problem Statement:
Get user age (int) and student status (boolean).

Use nested if or logical operators to determine:

- o If under 5 or over 65: $5
- o If 5-18 and student: $8
- o Otherwise: $12

Print the result.

Algorithm
Step 1: Start
Step 2: Taking input from the user (age) and a Boolean value for student status
Step 3: Comparing the input with the conditions
Step 4: Print output according to the condition
Step 5: End

Pseudo code:
Start
Input age and student status
Condition for $5 ticket
Print output
Condition for $8 ticket
Print output
Default Print output as $12
End

CODE:

```
package conditionalStatements;
import java.util.Scanner;
public class MovieTicketPrice {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
	Scanner sc= new Scanner(System.in);
```

```
        System.out.println("enter your age:");
        int age= sc.nextInt();
        System.out.println("student status:True or False");
        boolean ss=sc.nextBoolean();
        if(age<5 || age>65) {
                System.out.println("your ticket price is $5");
        }else if(age>=5 && age<=18) {
                if(ss==true) {
                        System.out.println("your ticket price is $8");
                }else {
                        System.out.println("your ticket price is $12");
                }
        }else {
                System.out.println("your ticket price is $12");
        }

        }

}
```

TC 1: age=12
Ss= True

```
enter your age:
12
student status:True or False
true
your ticket price i
```

TC 2: age=21
Ss= True

```
enter your age:
21
student status:True or False
true
your ticket price is $12
```

TC 3: age=16
Ss= false

```
enter your age:
16
student status:True or False
false
your ticket price is $12
```

Observation: The results of the program is to determine how much should one pay for ticket according to their age and student status yes or no. This can be done using simple if-else conditionals.

Section 3: Switch conditions

Problem Statement:
Ask the user to input an integer from 1-7.
Use a switch statement to print the corresponding day.
Include a default case for invalid inputs.

Algorithm
Step 1: Start
Step 2: Taking input from the user (1-7)
Step 3: Comparing values in switch case
Step 4: get the corresponding day according to the input
Step 5: End

Pseudo code:

Start
  Input num
  Comparing the num
    Performing the switch operation
    Print output
   Default Print output
End

CODE:

```
package switchLogic;
import java.util.Scanner;
public class DayOfWeek {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		Scanner sc=new Scanner(System.in);
		System.out.println("enter the number from 1-7");
		int a=sc.nextInt();
		switch(a) {
		case 1:System.out.println("Sunday");
			break;
		case 2:System.out.println("Monday");
			break;
		case 3:System.out.println("Tuesday");
			break;
		 case 4:System.out.println("Wednesday");
		break;
		 case 5:System.out.println("Thursday");
		break;
		 case 6:System.out.println("Friday");
		break;
		 case 7:System.out.println("Saturday");
		break;
		 default:System.out.println("invalid input");
		 }

	}

}
```

TC 1: num=4

```
enter the number from 1-7
4
Wednesday
```

TC 2: num=6

```
enter the number from 1-7
6
Friday
```

TC 3: num=10

```
enter the number from 1-7
10
invalid input
```

2.Problem Statement:

Simulate an ATM.
Get user input: 1 = Check Balance, 2 = Withdraw, 3 = Deposit, 4 =Exit.
Use switch to print the action.
Handle invalid input with a default case.

Algorithm
Step 1: Start
Step 2: Taking input from the user (1-4)
Step 3: Comparing values in switch case
Step 4: get the corresponding action according to the input
Step 5: End
Pseudo code:
Start
  Input num
  Comparing the num
    Performing the switch operation
    Print output
   Default Print output
End

CODE:

```
package switchLogic;
import java.util.Scanner;
public class SimpleMenu {

        public static void main(String[] args) {
                // TODO Auto-generated method stub
                Scanner sc=new Scanner(System.in);
                System.out.println(" enter the your action:  1:check balance  2:withdraw   3:deposit   4:exit ");
                int act=sc.nextInt();
                switch(act) {
                case 1: System.out.println(" you can check your balance by entering your pin");
                break;
                case 2: System.out.println(" you can withdraw your balance by entering your pin");
                break;
                case 3: System.out.println(" you can deposit the money by entering your pin");
                break;
                case 4: System.out.println(" you can Exit now");
                break;
                default: System.out.println("invalid input");
                }

        }

}
```

TC 1: num=4

```
enter the your action:  1:check balance  2:withdraw   3:deposit   4:exit
4
 you can Exit now
```

TC 2: num=2

```
enter the your action:  1:check balance  2:withdraw   3:deposit   4:exit
2
 you can withdraw your balance by entering your pin
```

TC 3: num=7

```
enter the your action:  1:check balance  2:withdraw   3:deposit   4:exit
7
invalid input
```

3.Problem Statement:
Input score (0-100).
Use if-else if-else to print:
o 90-100: "Excellent"
o 80-89: "Very Good"
o 70-79: "Good"
o 60-69: "Pass"
oBelow 60: "Fail"

Algorithm
Step 1: Start
Step 2: Taking input from the user (marks)
Step 3: Comparing values in range given with if else condition
Step 4: Get the grade for the range
Step 5: End

Pseudo code:
Start
  Input num
  Comparing the marks
    Performing the if-else operation
    Print output
   Default Print output
End

CODE:

```java
package switchLogic;

import java.util.Scanner;

public class GradeRemarks {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		Scanner sc=new Scanner(System.in);
		System.out.println("enter the marks from 0-100");
		int a=sc.nextInt();
		if(a>=0 && a<60) {
			System.out.println("fail");
		}else if(a>=60 && a<70)
		{
			System.out.println("pass");
		}else if(a>=70 && a<80)
		{
			System.out.println("good");
		}else if(a>=80 && a<90)
		{
			System.out.println("very good");
		}else if(a>=90 && a<100)
		{
			System.out.println("excellent");
		}else {
			System.out.println("invalid marks");
		}
	}

}
```

TC 1: marks=78

```
enter the marks from 0-100
78
good
```

TC 2: marks=51

```
enter the marks from 0-100
51
fail
```

TC 3: marks=120

```
enter the marks from 0-100
120
invalid marks
```


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