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Assignment no 1

Lab Assignment: Flowchart and Java Programming

Q1

Check Positive Number:

- Task: Create a flowchart to check whether a number is positive.

- Next Step: Write a Java program that checks if a predefined number is positive using an if-else statement and prints the appropriate message.

ANSWER

Flowchart

- **Step 1**
  A number is received as **"input"**
- **Step 2**
  The input value is passed through the condition **"Number>0"**
- **Step 3**
  If the input value satisfies the given condition in **Step 3**
- **Step 4**
  The output shall be displayed as **"Number is Positive"** and the code is terminated**.**
- **Step 5**
  If the input value received in the "**Step 1"** does not satisfies the condition **"Number>0"**
- **Step 6**
  Then the input value shall run through the "**else if"** statement and the code shall Check for condition "Number<0" and if the condition is satisfied, the output message shall be printed as "**The number is negative".**
- **Step 7**
  If the number does not satisfy any condition from **step 2** and **step 6** then the output message shall be displayed as "**Number is neither negative nor positive".**

Java code

```
public class PositiveCheck {
  public static void main(String[] args) {
    int number = 156;   //  Predefined  number

    if (number > 0) {
      System.out.println(number + " is positive.");
    } else if (number < 0) {
      System.out.println(number + " is negative.");
    } else {
      System.out.println(number + " is neither positive nor negative.");
    }
  }
}
```

2. Check Negative Number:

• Task: Create a flowchart to check whether a number is negative.

• Next Step: Write a Java program that checks if a predefined number is negative using an if-else statement and displays the result.

ANSWER

- **FLOWCHART**
- **Step 1**
  A number is received as **"input"**
- **Step 2**
  The input value is passed through the condition **"Number>0"**
- **Step 3**
  If the input value satisfies the given condition in **Step 3**
- **Step 4**
  The output shall be displayed as **"Number is Positive"** and the code is terminated**.**
- **Step 5**
  If the input value received in the "**Step 1"** does not satisfies the condition **"Number>0"**
- **Step 6**
  Then the input value shall run through the "**else if"** statement and the code shall Check for condition "Number<0" and if the condition is satisfied, the output message shall be printed as "**The number is negative".**
- **Step 7**
  If the number does not satisfy any condition from **step 2** and **step 6** then the output message shall be displayed as "**Number is neither negative nor positive".**

Java code

```
        public class NegativeCheck {
   public static void main(String[] args) {
      int number =  -156;   //  Predefined  number


      if (number < 0) {
         System.out.println(number + " is negative .");
      } else if (number > 0) {
         System.out.println(number + " is positive.");
      } else {
         System.out.println(number + " is neither positive nor negative.");
      }
   }
}
```

3. Check Odd or Even Number:

- Task: Create a flowchart to determine whether a number is odd or even.
- Next Step: Write a Java program that checks if a predefined number is odd or even. Use an if-else statement and the modulus operator (%) to determine whether the number is divisible by 2 or not.

ANSWER

- **FLOWCHART**
- **Step 1**
  A number is received as **"input"**
- **Step 2**
  The input value is passed through the condition **"number % 2 == 0"**
- **Step 3**
  If the input value satisfies the given condition in **Step 2**
- **Step 4**
  The output shall be displayed as **"Number is EVEN"** and the code is terminated**.**
- **Step 5**
  If the input value dose not satisfies the statement from Step 2 the output message shall be displayed as "**Number is odd".**

Java code

```
public class OddEvenCheck {
   public static void main(String[] args) {
      int number = 8;  // Predefined number

      if (number % 2 == 0) {
         System.out.println(number + " is even.");
      } else {
         System.out.println(number + " is odd.");
      }
   }
}
```

4. Display Good Morning Message Based on Time:

- Task: Create a flowchart to display a "Good Morning" message based on a given time.
- Next Step: Write a Java program that displays a "Good Morning" message if the predefined time is between 5 AM and 12 PM. Use an if statement to implement the logic.

ANSWER

- **FLOWCHART**
- **Start:** The beginning of the program.
- **Hour >= 5 AND Hour < 12?:** This is the decision point. It checks if the current hour is within the specified range (5 AM to 12 PM).
- **Yes:** If the condition is true, the program proceeds to display "Good Morning".
- **Display "Good Morning":** This step prints the message to the console.
- **No:** If the condition is false, the program skips the message display.
- **End:** The program terminates.

JAVA CODE

```
import java.util.Calendar;


public class GoodMorning {


   public static void main(String[] args) {
      Calendar calendar = Calendar.getInstance();
      int hour = calendar.get(Calendar.HOUR_OF_DAY);


      if (hour >= 5 && hour < 12) {
         System.out.println("Good Morning");
      }
   }
}
```

5. Print Area of a Square:

- Task: Create a flowchart to calculate and print the area of a square.
- Next Step: Write a Java program that calculates the area of a square using the formula area = side * side. Use a predefined side length.

ANSWER

- **FLOWCHART**
- **STEP 1**
  The program is initiated by defining a class as SquareArea.
- **STEP 2**
  To calculate area of square a "**double** "variable named "**side"** is created and a predefined value is assigned to the variable side in this case "9".
- **STEP 3**
  As the variable side has now a predefined value with the help of "side * side "formula the multiplication action is carried out i.e. "9 *9".
- **STEP 4**
  The output is printed or displayed as "The area of the square with side 9 is 81 ".

Java code

```
public class SquareArea {

   public static void main(String[] args) {
         double side = 9;


      double area = side * side;



      System.out.println("The area of the square with side " + side + " is: " + area);
   }
}
```

6. Print Area of a Rectangle:

- **Task: Create a flowchart to calculate and print the area of a rectangle.**
- **Next Step: Write a Java program that calculates the area of a rectangle using the formula area = length * width. Use predefined values for length and width.**

ANSWER

- **FLOWCHART**
- **STEP 1**
  The program is initiated by defining a class as RectangleArea.
- **STEP 2**
  To calculate area of rectangle two **"double** "variables named "**length"** and "**width** "are created and a predefined values are assigned to the both the variable length being "9 "in this case and width being "10".
- **STEP 3**
  As the two variables now have a predefined values of length is "9" and width is"10" With the help of formula "width* length "the area of the rectangle is calculated.

- **STEP 4**
  The output is printed or displayed as "The area of the rectangle with length 9 and width 10 is 90".

JAVA CODE

```
public class RectangleArea {

   public static void main(String[] args) {

      double length = 9;
      double width = 10;


      double area = length * width;

            System.out.println("The area of the rectangle with length " + length + "
and width " + width + " is: " + area);
   }
}
```

7. Find the Largest of Three Numbers:

- Task: Create a flowchart to find the largest of three numbers.
- Next Step: Write a Java program that finds and prints the largest of three predefined numbers using if-else statements.

ANSWER
FLOWCHART

- **STEP 1**
  Three various integers are defined as num 1, num 2 and num 3 with three different predefined values
- **STEP 2**
  With the help of if condition the integers are checked between each other i.e.
  If num1 >= num2,num1>=num3, if the num1 satisfies this condition then the num1 is identified as largest
- **STEP3**
  If the num1 does not satisfies these conditions with the help of "else if" statement num2 is checked with the following conditions i.e. num2>=num1, num2>=num3 if num2 satisfies the conditions then num2 is the largest
- **STEP4**
  If num2 does not satisfy the conditions with the help of "else statement the num3 is declared as the largest as num1 and num2 have been checked with both each other and with num3 in step2 and step 3.

JAVA CODE public class LargestOfThree {

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

    int num1 = 25;
    int num2 = 15;
    int num3 = 30;

    int largest;

    if (num1 >= num2 && num1 >= num3) {
       largest = num1;
    } else if (num2 >= num1 && num2 >= num3) {
       largest = num2;
    } else {
       largest = num3;
    }

    System.out.println("The largest number is: " + largest);
```

```
    }
}
```