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Subject: Programming Fundamentals

Assignment: No. 1

Department: ADP(IT)

Programming Fundamentals

Questions:

1. **Write an algorithm to find the smallest of three numbers.**

   Answer: -

   Step 1: Start

   Step 2: Read three numbers: X, Y, Z

   Step 3: If (X < Y) and (X < Z), then set smallest = X

   Step 4: Else If (Y < Z), then set smallest = Y

   Step 5: Else set smallest = Z

   Step 6: Display smallest

   Step 7: Stop

2. **Write an algorithm to calculate the sum of the first 50 natural numbers using a loop.**

   Answer: -

   Step 1: Start

   Step 2: Initialize sum = 0, num = 1

   Step 3: While num <= 50, do:

   Step 4: sum = sum + num

   Step 5:num = num + 1

   Step 6: Display sum

   Step 7: Stop

3. **Write an algorithm to count how many times a user enters a positive number (stop when a negative number is entered).**

   Step 1: Start

   Step 2: Initialize count = 0

   Step 3: Read a number, num

   Step 4: While num >= 0, do:

   Step 5: count = count + 1

Step 6: Read num

Step 7: Display count

Step 8: Stop

4. **Write an algorithm to calculate the sum of digits of a given number (e.g., 453 → 4+5+3).**

Step 1: Start

Step 2: Read a number, num

Step 3: Initialize sum = 0

Step 4: While num > 0, do:

Step 5: digit = num % 10

Step 6: sum = sum + digit

Step 7: num = num / 10

Step 8: Display sum

Step 9: Stop

5. **Write an algorithm to find the number of digits in a given positive number.**

Step 1: Start

Step 2: Read a number, num

Step 3: Initialize count = 0

Step 4: While num > 0, do:

Step 5: num = num / 10

Step 6: count = count + 1

Step 7: Display count

Step 8: Stop

6. **Write an algorithm to print all numbers from 1 to 100 that are divisible by both 3 and 5.**

Step 1: Start

Step 2: Initialize num = 1

Step 3: While num <= 100, do:

Step 4: If (num % 3 = 0) and (num % 5 = 0), then:

Step 5: Display num

Step 6: num = num + 1

Step 7: Stop

7. **Write an algorithm to input five numbers one by one and find the highest among them.**

Step 1: Start

Step 2: Read first number, num

Step 3: Initialize highest = num

Step 4: Repeat 4 times:

Step 5: Read num

Step 6: If num > highest, then:

Step 7: highest = num

Step 8: Display highest

Step 9: Stop

8. **Write an algorithm to reverse a number (e.g., 123 → 321).**

Step 1: Start

Step 2: Read a number, num

Step 3: Initialize reversed = 0

Step 4: While num > 0, do:

Step 5: digit = num % 10

Step 6: reversed = reversed * 10 + digit

Step 7: num = num / 10

Step 8: Display reversed

Step 9: Stop

9. **Write an algorithm to check if a number is a palindrome (reads the same forward and backward).**

Step 1: Start

Step 2: Read a number, num

Step 3: Initialize temp = num, reversed = 0

Step 4: While temp > 0, do:

Step 5: digit = temp % 10

Step 6: reversed = reversed * 10 + digit

Step 7: temp = temp / 10

Step 8: If reversed = num, then:

Step 9: Display "Number is a palindrome"

Step 10: Else:

Step 11: Display "Number is not a palindrome"

Step 12: Stop

10. **Write an algorithm to find the sum of all even numbers between 1 and 100.**

Step 1: Start

Step 2: Initialize sum = 0, num = 2

Step 3: While num <= 100, do:

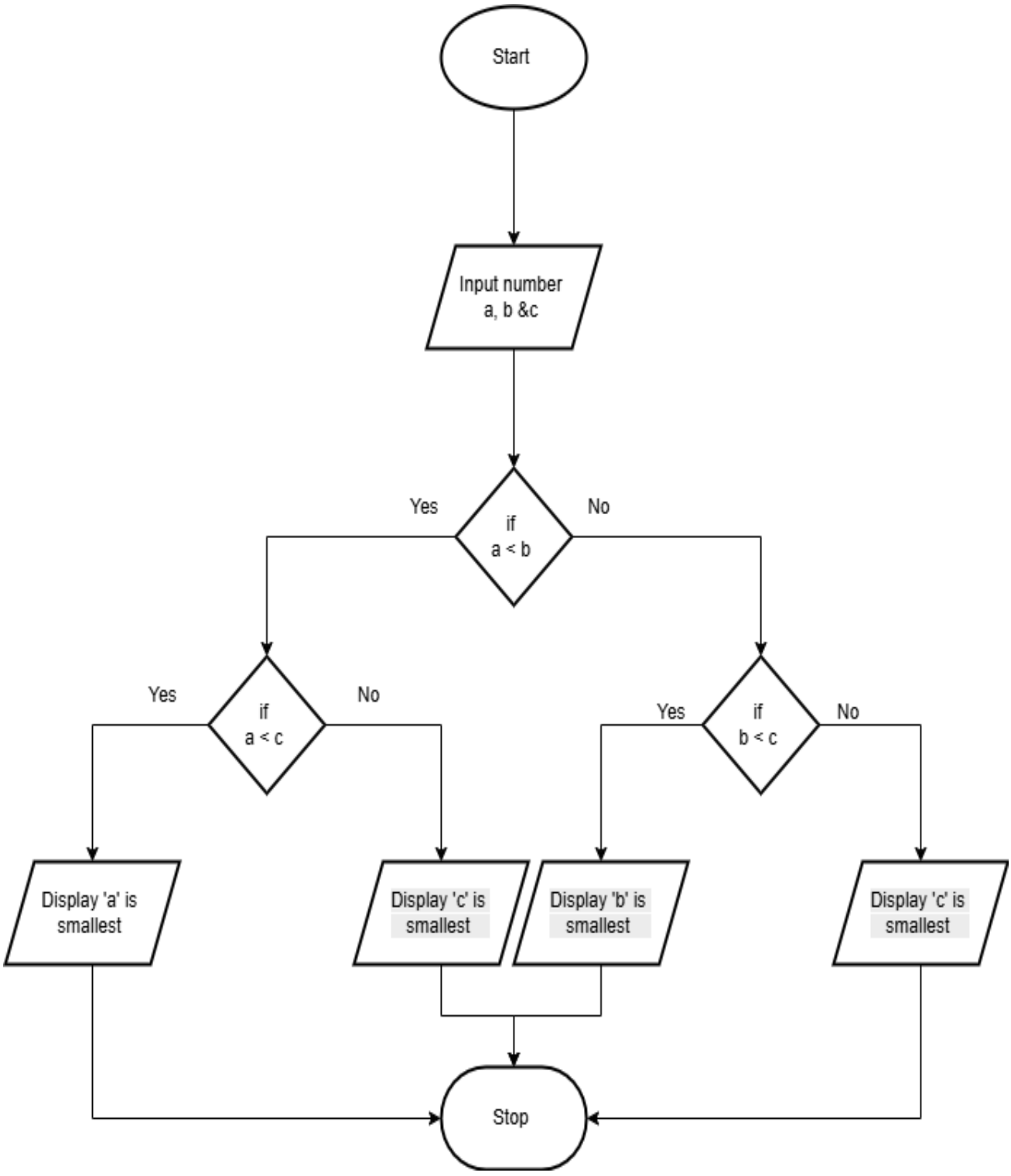
Step 4: sum = sum + num

Step 5: num = num + 2

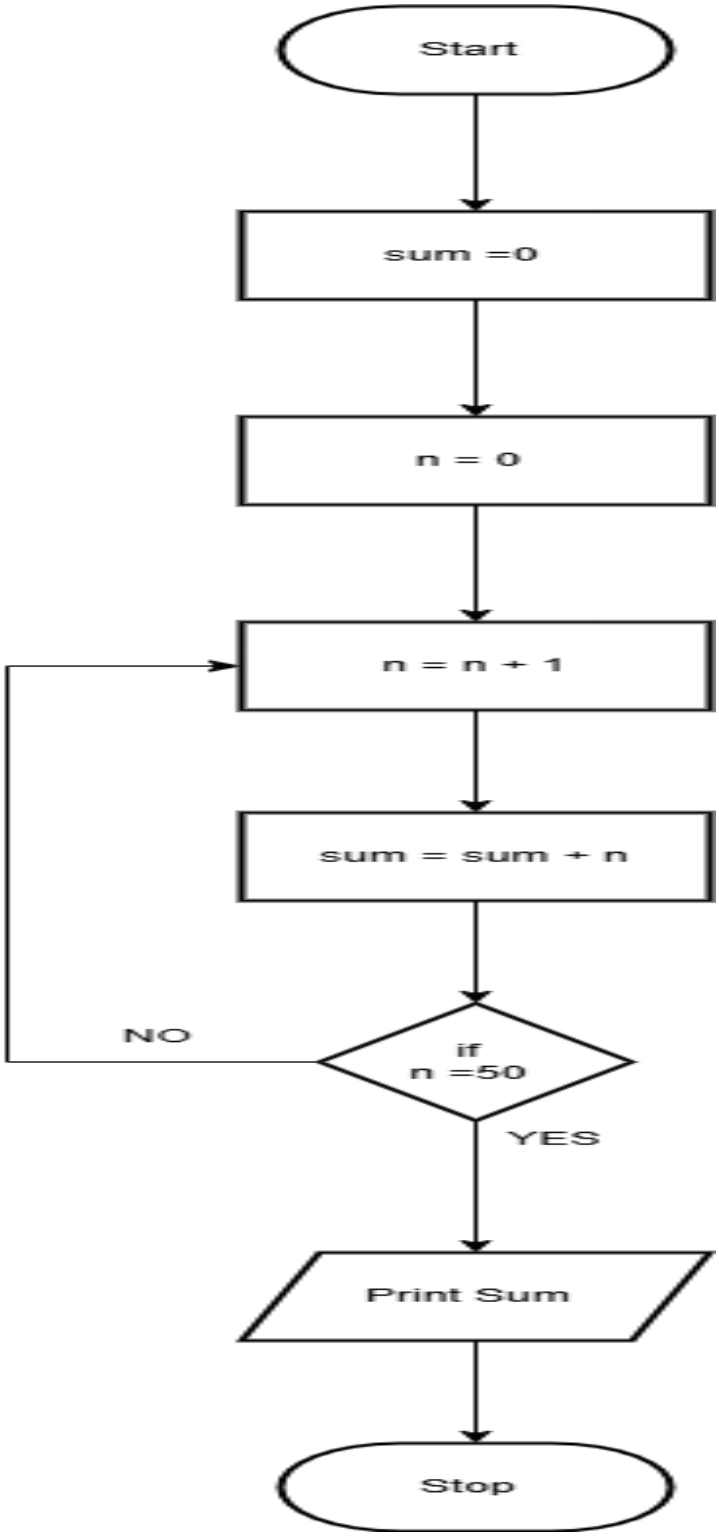
Step 6: Display sum

Step 7: Stop

11.Draw a flowchart to find the smallest of three numbers.



12.Draw a flowchart to calculate the sum of the first 50 natural numbers using a loop.



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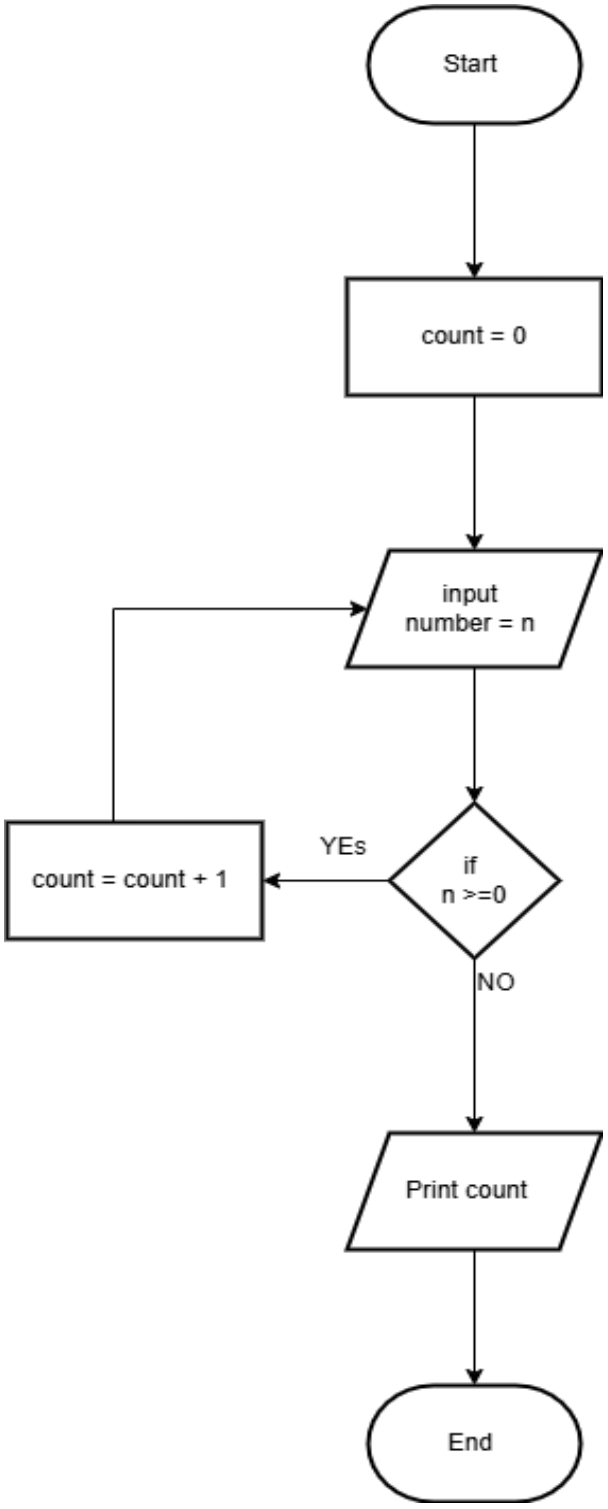
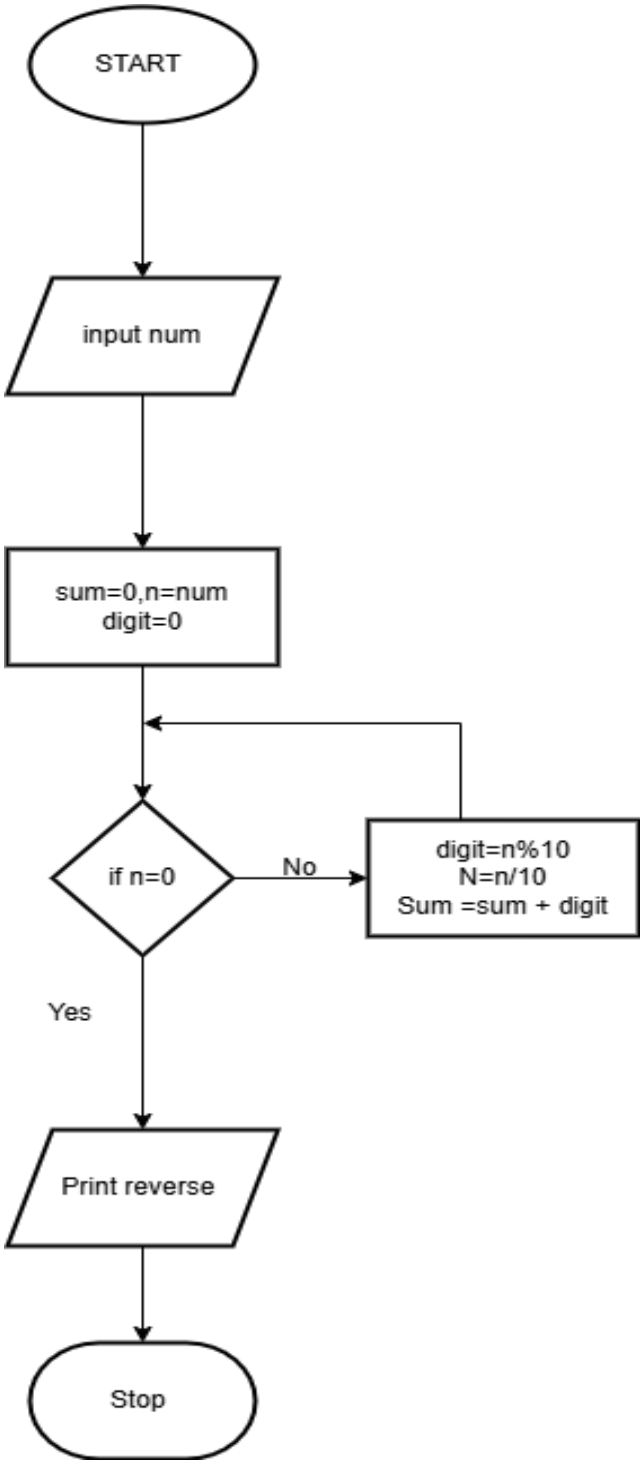
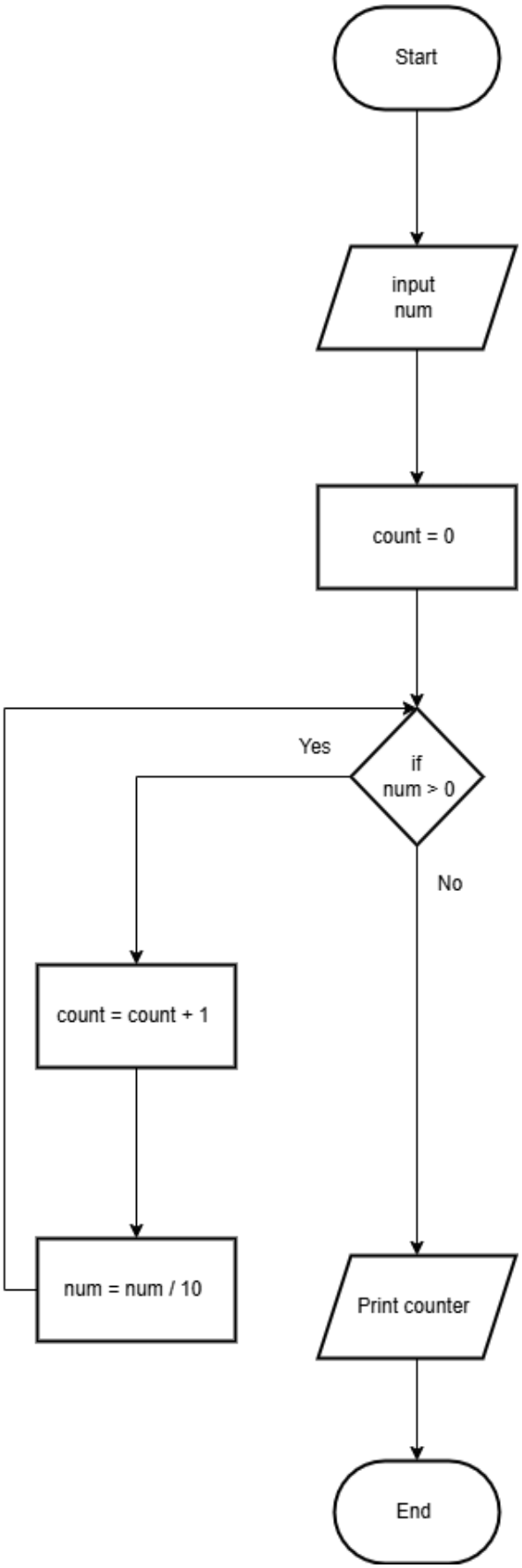


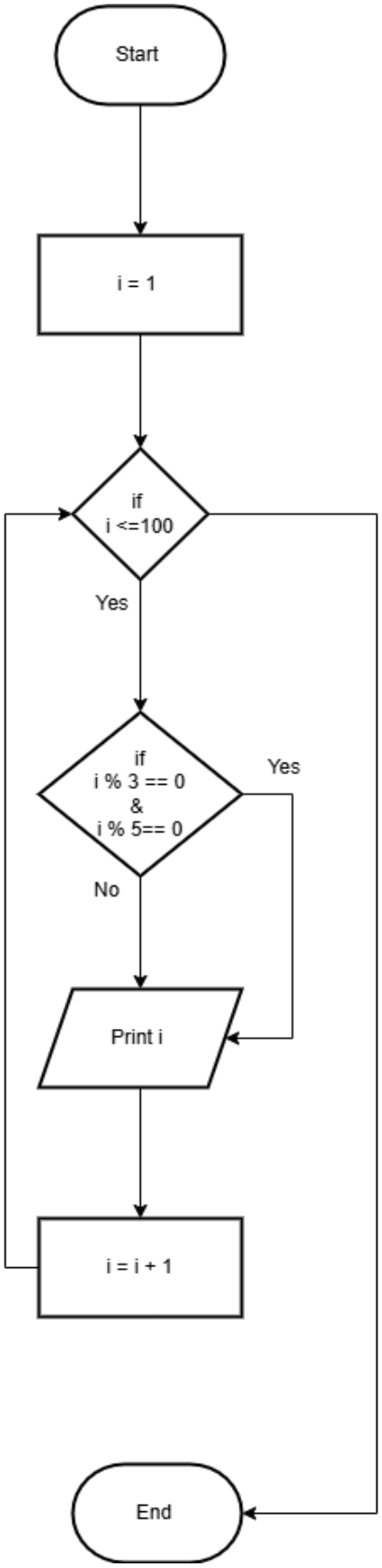
14.Draw a flowchart to calculate the sum of digits of a given number (e.g., 453 → 4+5+3).



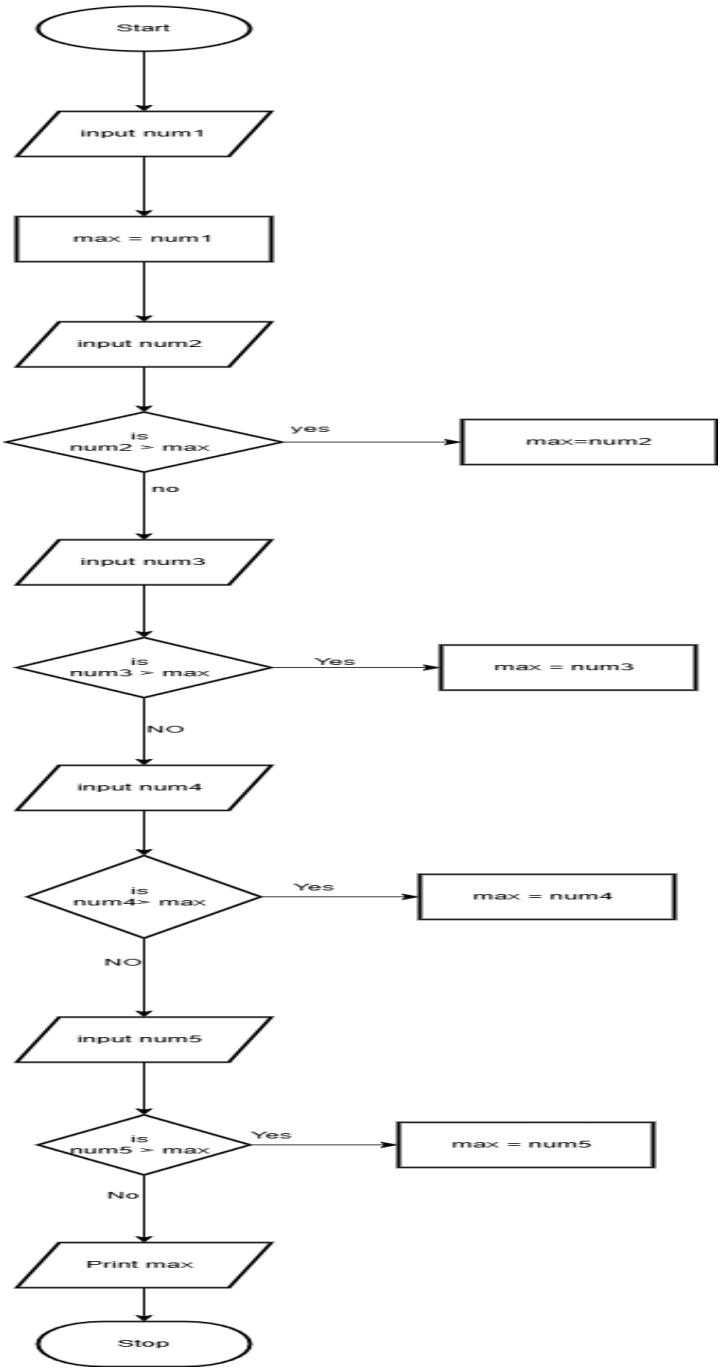
15.Draw a flowchart to find the number of digits in a given positive number.



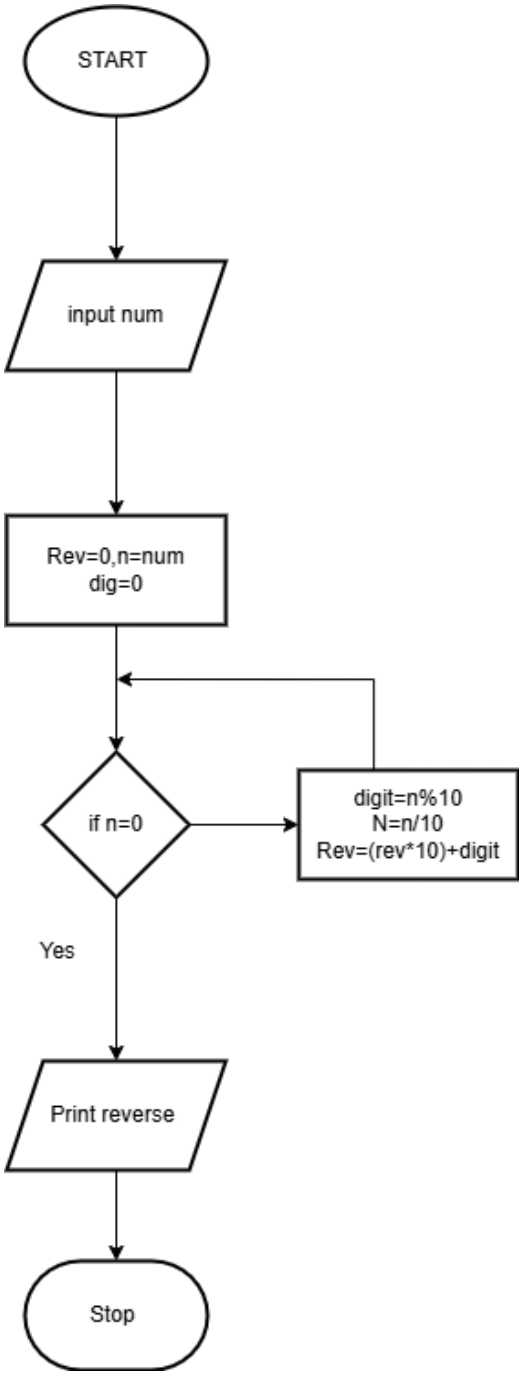
16.Draw a flowchart to print all numbers from 1 to 100 that are divisible by both 3 and 5.



17.Draw a flowchart to input five numbers one by one and find the highest among them.



18.Draw a flowchart to reverse a number (e.g., 123 → 321).



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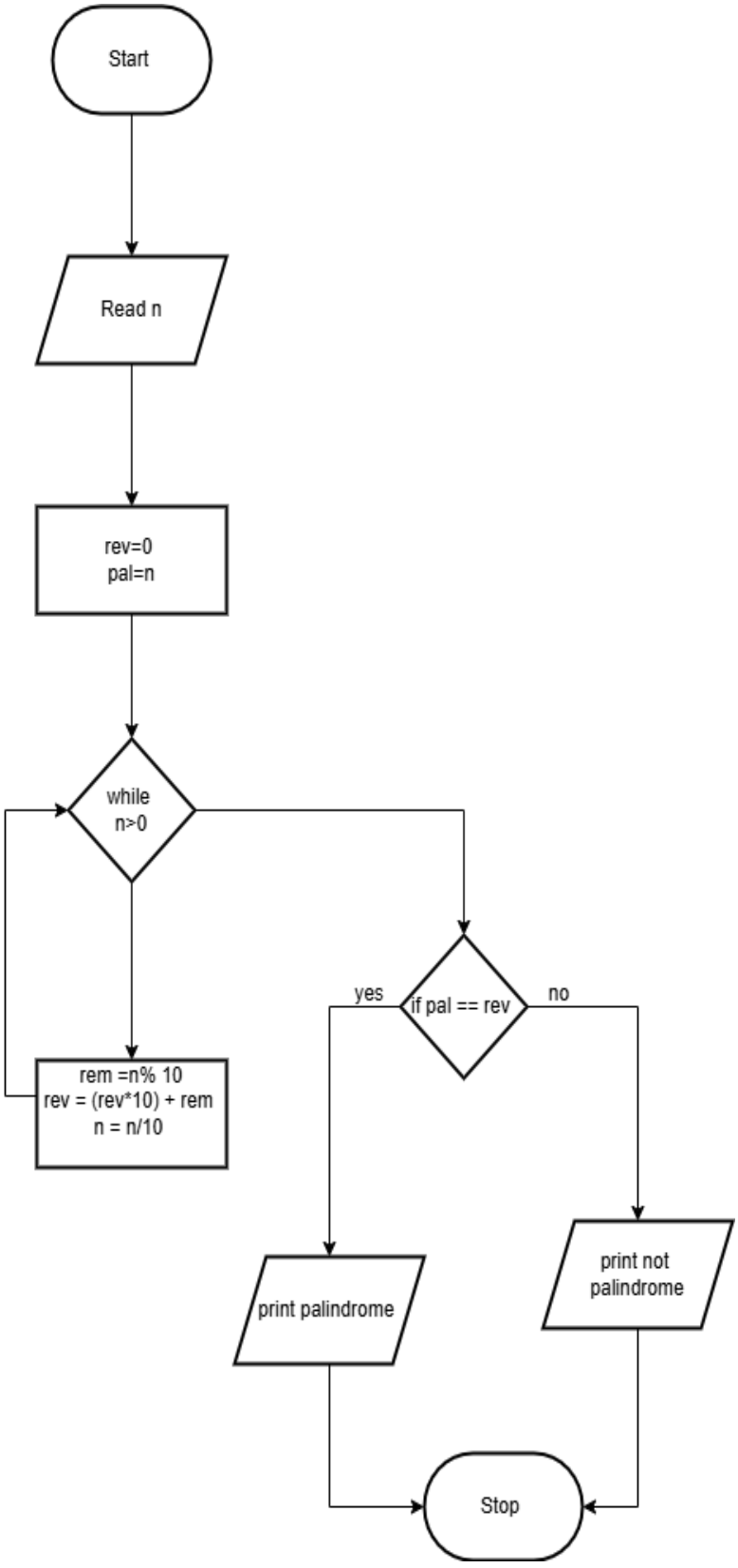

20.Draw a flowchart to find the sum of all even numbers between 1 and 100.