St. Mary's University
Department of Computer Science
Introduction to Computing Science - Worksheet 3

1. Draw a flowchart that calculates the area of a triangle and displays the result.
2. Draw a flowchart to find the average age of a group of 50 players? (Hint: Use a loop to accept the age of the players with just one variable.)
3. Draw a flowchart for a simple calculator that takes two numbers and performs Sum, Difference, Product, and Division based on the user's choice(+,-,*,/) (i.e. if the user enters 5 and 2 and '+' sign then it should display the sum=7, if '-' Diff.=3, if '*' pro.=10, if '/' div.=2.5)
4. Draw a flowchart for a program that takes a positive number and adds all the odd numbers less than or equal to itself.
5. Draw a flowchart for a program that takes three numbers and displays the largest.
6. Draw a flowchart for a program that takes three integers and displays them in an ascending order.
7. Draw a flowchart that accepts a number from the user and determines whether it is divisible by 3 or not.
8. Draw a flowchart for a program that takes a positive integer as an input and calculates the factorial of that number (n!).
9. Draw a flowchart for (n-2)!
10. Draw a flowchart for (n-m)! where both n and m are input from the user.
11. Draw a flowchart that takes a positive number as an input and finds the sum of natural numbers up to that number.
12. Draw a flowchart for a program that takes a positive number and determines whether it is odd or even.
13. Draw a flowchart for a program that takes a positive number and determines whether it is prime or not.
14. Draw a flowchart for a program that takes a positive number and adds all the prime numbers up to that number and prints the sum.
15. Draw a flowchart that calculates the slope of a line after taking the coordinates of two points on the line(x1,y1, and x2,y2).
16. Draw a flowchart that takes a number as an input and calculates the summation of the fractions given in the following formula: S= 1+1/3 +1/5+1/7+1/9+ … +1/n
17. Draw a flowchart that takes a number that is between 0 and 100 from the user and displays their grade according to the following scale:

    100 – 90 – > 'A'
    80 – 90 – > 'B'
    70 – 80 – > 'C'
    60 – 70 – > 'D'
18. Draw a flowchart that prints the first 20 terms of the Fibonacci series: 1, 1, 2, 3, 5, 8, 13…
19. Draw a flowchart that displays the following

a.
```
* * * * *
* * * *
* * *
* *
*
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b.
```
5 5 5 5 5
4 4 4 4 4
3 3 3 3 3
2 2 2 2 2
1 1 1 1 1
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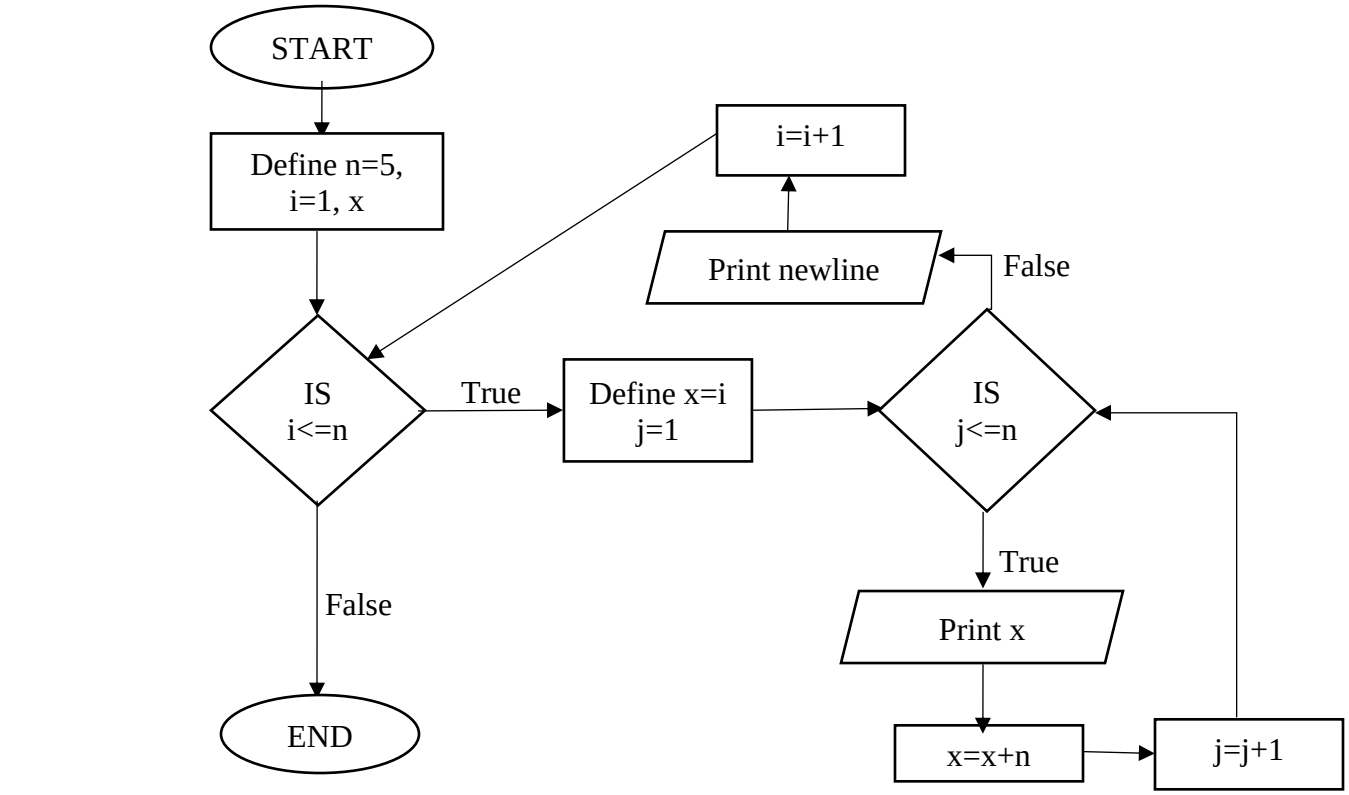
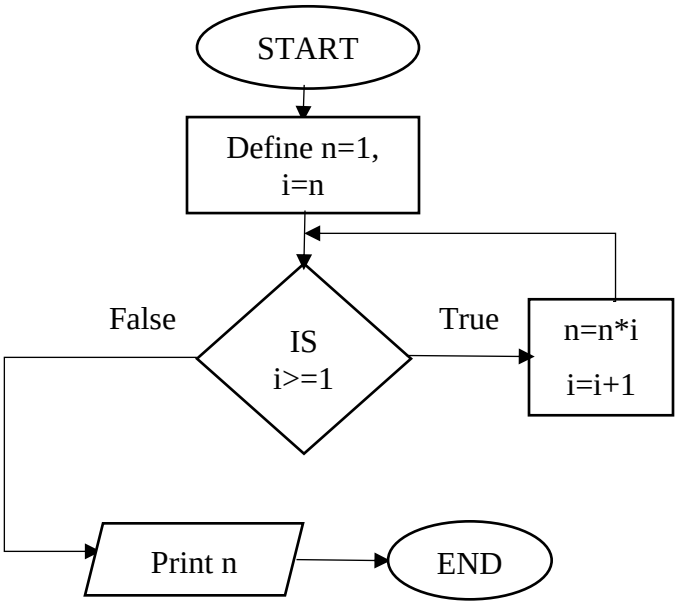
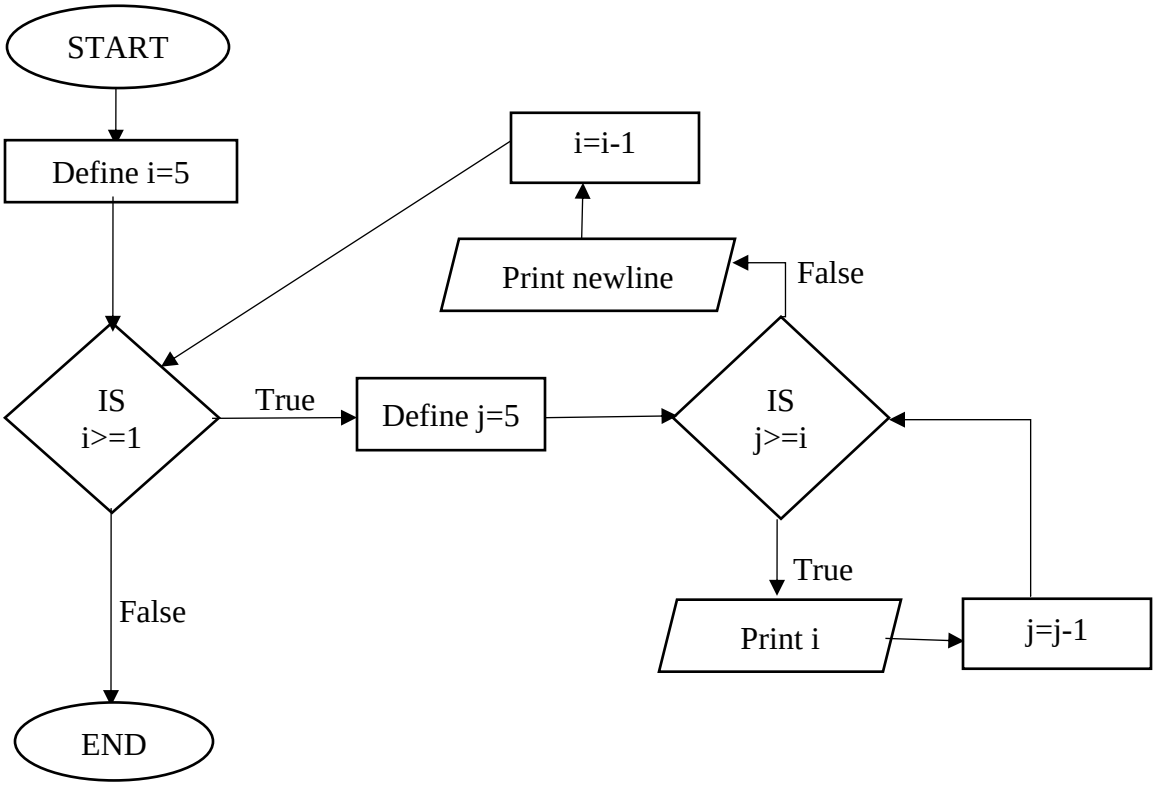
20. What is the output of the following flowchart if it is correct and if it is not what is the problem and how can you correct it? Show each of your step!



21. What is the output of the following flowchart if it is correct and if it is not what is the problem and how can you correct it? Show each of your step!



22. What is the output of the following flowchart if it is correct and if it is not what is the problem and how can you correct it? Show each of your step!



23. Draw a flowchart that takes a positive decimal number and converts it to its binary equivalent .