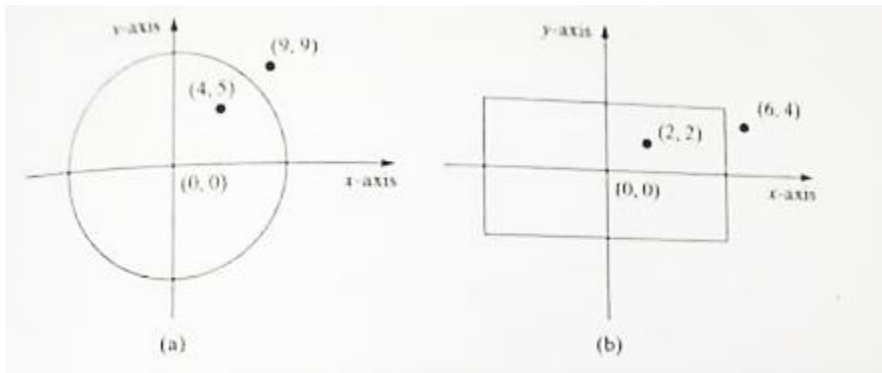


Lab # 2: Artificial Intelligence (CSC-1071)

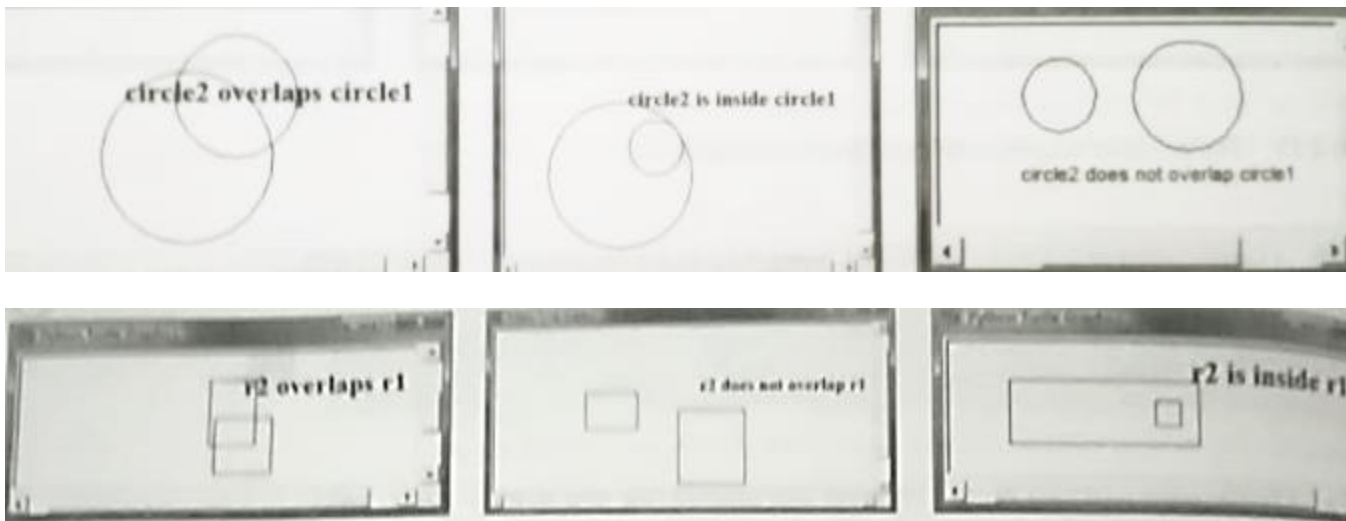
Basic Information			
Registration#		Name	
Total Marks	10	Marks Obtained	
Tools:	Any Interpreter of your choice		
Objectives	1. While Loops 2. For Loops	3. Nested Loops 4. Classes & Objects	

Simple Programs

- Write a function which input width, height and start (x, y) and draw a rectangle
- Write a program which prompts the user to enter a point and check point is within the circle and rectangle. Suppose that they are centered at point 0,0



- Write two programs that prompts the user to enter the center (x, y) coordinates, width and height of two rectangles and circle as below. It determines that second rectangle/circle is inside the first or overlaps with the first as shown:



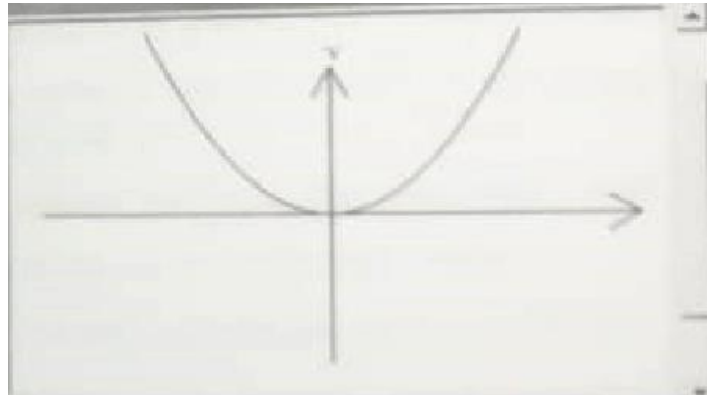
Loops

- Ask the user to enter a number and calculate factorial up to that number. For example, if user enter 7 then you will calculate $7! = 7*6*5*4*3*2*1$
- Ask user to enter a 5-digit integer number and display this number in reverse using loop
- Input positive numbers (-1 to end) and display the largest and smallest number among these numbers
- Ask the user to enter two numbers and find their GCD (Greatest Common Divisor). Hint (Initialize GCD=1 and iterate it until it remains less than one of the numbers)
- A prime number is a number which is only divisible to 1 and itself. Input a number and check whether it is prime or not (Iterate a number less than $n/2$ and check whether it divides a number or not)

9. Write a program that display 20 random balls in a rectangle with width 120 and height 100, centered at (0, 0) as shown below:



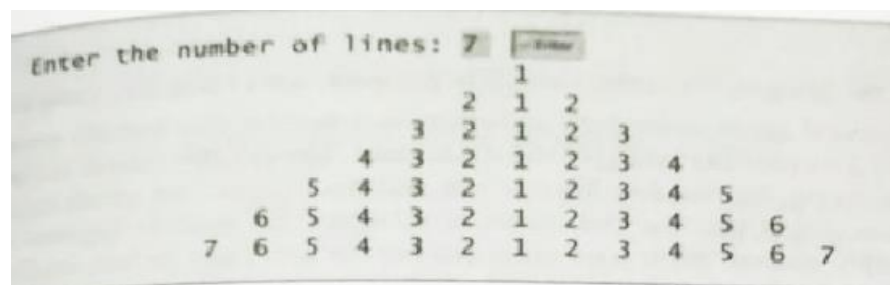
10. Write a program that draws a diagram for the function $f(x)=x^2$



11. Write a program which plot sine function in red and cosine in blue

Nested Loops

12. Write a program that prompts the user to enter an integer from 1 to 15 and displays a pyramid as shown below:



13. Use nested loop that display the following pattern in four separate programs:

Pattern A	Pattern B	Pattern C	Pattern D
1	1 2 3 4 5 6	1	1 2 3 4 5 6
1 2	1 2 3 4 5	2 1	1 2 3 4 5
1 2 3	1 2 3 4	3 2 1	1 2 3 4
1 2 3 4	1 2 3	4 3 2 1	1 2 3
1 2 3 4 5	1 2	5 4 3 2 1	1 2
1 2 3 4 5 6	1	6 5 4 3 2 1	1

14. Create a class BOOK with properties ISBN, Title, Price, Main Area, Sub Area, No of Pages. Constructor initialize these properties and show function display properties of and object. Call functions using object
15. Create a class Computer with properties: Brand Name, Speed, Memory Size. Constructor initialize these properties and show function display properties of and object. Call functions using object.