

# CS19101 PDS laboratory

## Lab Test-1

[Even PC]

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Write programs for problems 1,2 and 3 in three different files named LT1\_1\_<machine number>\_<Roll no.>.c, LT1\_2\_<machine number>\_<Roll no.>.c and LT1\_3\_<machine number>\_<Roll no.>.c respectively (without the '<' and '>'). Put these three files into a compressed directory named LT1\_<machine number>\_<Roll no.>.zip and submit it.

**Example:** If your roll number is 19DEP99999 and your machine number is 99, then the names of your files should be LT1\_1\_99\_19DEP99999.c, LT1\_2\_99\_19DEP99999.c and LT1\_3\_99\_19DEP99999.c.

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1. Take an integer as input through keyboard, and print a pattern on the screen as shown below.

Enter integer: 5

```
* * * * *
 * * * * *
  * * * *
   * * *
    *
   * * *
  * * * *
 * * * * *
* * * * * * *
```

Enter integer: 3

```
* * * *
 * * *
  *
 * * *
* * * * *
```

[10 marks]

2. In this problem, do not use array. The user enters vertices of a polygon in clockwise order. Each vertex is a pair of integer co-ordinates  $(x, y)$ . After the user enters a vertex, ask the user to enter 1 if she wants to enter another vertex, and enter 0 otherwise. Allow the user to enter as many vertices as she wants. Finally, print “regular” if the length of the sides of the polygon are all equal, and “not regular” otherwise. Use only integer arithmetic; do not use float or double variables in your program. You may note that comparing two numbers for equality is the same as comparing their squares for equality.

Sample input/output:

```
Enter x co-ordinate: 1
Enter y co-ordinate: 0
Enter more vertices? 1
Enter x co-ordinate: 0
Enter y co-ordinate: -1
Enter more vertices? 1
Enter x co-ordinate: -1
Enter y co-ordinate: 0
Enter more vertices? 1
Enter x co-ordinate: 0
Enter y co-ordinate: 1
Enter more vertices? 0
regular
```

[10 marks]

3. Write a function with the following prototype:

**int findmode(int A[]);**

The above function takes in an integer array of size 10 as argument, and returns an integer that occurs in the array maximum number of times. Example: Let the array A be (10, 2, 3, 3, 4, 5, 4, 4, 3, 3). If A is passed to findmode(), then it returns 3. In main(), declare an integer array of size 10, and fill it by taking inputs through the keyboard. Assume that all the integers are between 0 and 10 (both inclusive). Then pass the array to findmode(). Finally in main() print what findmode() returns. To implement findmode() you may use a new array to count the number of occurrences of each element.

Sample input/output:

```
Enter number 1: 0
Enter number 2: 2
Enter number 3: 0
Enter number 4: 9
Enter number 5: 8
```

Enter number 6: 2  
Enter number 7: 0  
Enter number 8: 9  
Enter number 9: 9  
Enter number 10: 0  
0

[10 marks]