Lab 7

(Follow the coding standards : Modularise your code using functions for all subtasks in a problem. Pass as parameter inputs of the task and return the result wherever possible. Give meaningful names to functions and variables in the code. Give proper comments for better readability of the code.)

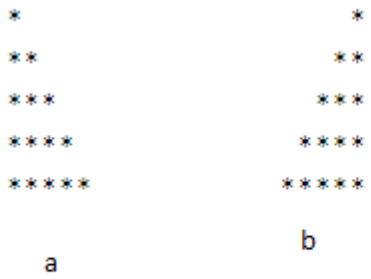
1. Write a program which prints all perfect numbers in a given interval (Start,End)
   Implement the functions:
   isperfect*(number) which checks whether a number is perfect or not. Return a bool*
   printperfect*(Start,End) which prints all the perfect numbers in the interval start,end.*
   [Hint:Perfect number is a positive integer which is equal to the sum of its proper positive divisors.
   For example: 6 is the first perfect number
   Proper divisors of 6 are 1, 2, 3
   Sum of its proper divisors = 1 + 2 + 3 = 6.
   Hence 6 is a perfect number.]

2. Let P_1,P_2,……P_n be the first n prime numbers. Find the summation of the following sequence.
   $$\frac{P_1}{(P_1)!}+\frac{P_2}{(P_2)!}+\frac{P_3}{(P_3)!}+..+\frac{P_n}{(P_n)!}$$

3. Produce the following sequence and print the sum of the sequence $x^2+x^4+...+x^n$, where the exponents need to be even number. If the n entered by the user is odd, give a message and read again a new value for n.

4. Write a program to swap the first and last digit of a number.
   [Hint:Suppose num = 12345
   lastDigit = 12345 % 10 => 5
   digits = (No:of digits of num) -1 = 4
   firstDigit = 12345 / pow (10, 4) => 12345 / 10000 => 1]

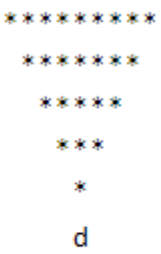
5. Write python program to print following patterns:



a

b

c



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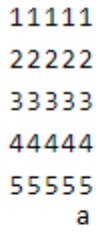
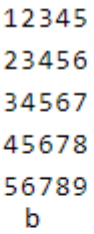


a



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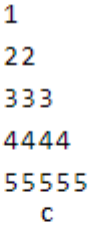

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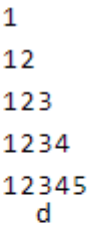

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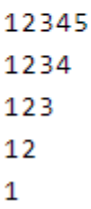

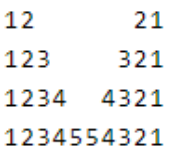

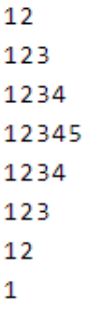

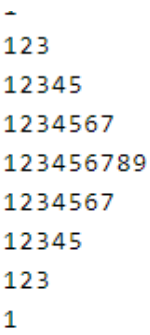

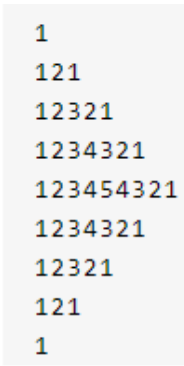

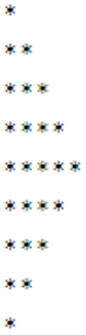

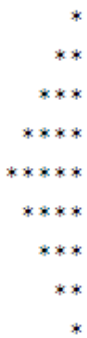

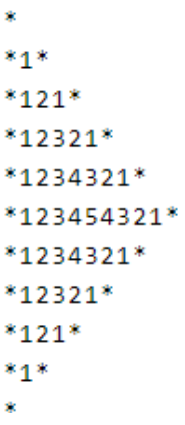

6. **Solve the following problems in codeforces**

http://codeforces.com/problemset/problem/1017/A
https://codeforces.com/problemset/problem/1080/A

MOCK –TEST in DomJudge

Instructions for DomJudge (Mocktest)

1. Go to site **http://contest.amrita.edu**
2. Click **login** button at the top
3. Register as per the instructions below
    1. User name can be your MOCK_U4CSE…… (Roll no in All caps)
    2. Password can be your choice
4. Login with your credentials in **http://contest.amrita.edu**
5. On the right top, select **wed-12th** from the drop-down box.
6. Submit your solution to the problems.
7. In case of any doubts, ask the faculty members. Don't keep quiet or be satisfied with your friend's clarification.