LOOPS Questions:

**1.Problem statement**

Rakul is weak in finding a series. Write a program to generate n terms in the following series to help him.

1 2 4 8 16 32 ....

**Input Format**

Input consists of a single integer that represents the value of n.

**Output Format**

Output consists of n elements in the series separated by a space.

**Sample Input 1**

6

**Sample Output 1**

1 2 4 8 16 32

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2.Rachitha loves to play with numbers. She will say a number and her friends will say the reverse of the number. Write a program to obtain a number and to find the reverse of it.

**Input Format**

The input consists of an integer.

**Output Format**

The output consists of the reverse of the given integer.

**Sample Input 1**

4578

**Sample Output 1**

8754

Note: Your program should work for any number with any no of digits.

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**3.Problem statement**

**Series 1**

The Event Organizing Company "Buzzcraft" focuses event management in a way that creates a win-win situation for all involved stakeholders. Buzzcraft don't look at building one time associations with clients, instead, aim at creating long-lasting collaborations that will span years to come. This goal of the company has helped them evolve and gain more clients within notable time.

The number of clients of the company from the start day of their journey till now is recorded sensibly and is seemed to have followed a specific series like: 2,3,5,7,11,13,17,19, 23 ...

Write a program which takes an integer N as the input and will output the series till the Nth term.

**Sample Input 1**

5

**Sample Output 1**

2 3 5 7 11

**Sample Input 2**

10

**Sample Output 2**

2 3 5 7 11 13 17 19 23 29

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**4.Problem statement**

Sam participated in a competition in which he has to find the sum of digits of a number within a short period. Write a program to find the sum of digits of a number given by the user.

**Sample Input 1**

8765

**Sample Output 1**

26

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**5.Problem statement**

Write a program to find the sum of even and odd elements up to a given N value.

**Input Format**

Input consists of one integer.

**Output Format**

Output consists of 2 integers.Refer the sample output for specifications.

**Sample Input 1**

10

**Sample Output 1**

Even 30

Odd 25

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**6.Problem statement**

Pranavi wants to find all the divisors of a number to win in a competition. Write a program to obtain a number and to find all of its divisors.

**Input Format**

Input consists of a single value.

**Output Format**

Output consists of a series of values separated by a space that consists of the divisors of the number.

**Sample Input 1**

100

**Sample Output 1**

1 2 4 5 10 20 25 50 100

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7.Given is an integer, which represents the amount as an input from the user, display the minimum number of notes ₹ (500, 100, 50, 20, 10, 5, 2, 1) required for the amount.

**Input Format**

The input consists of the amount.

**Output Format**

The output prints the minimum number of notes required for the amount.

Refer sample output for formatting specifications.

**Sample Input 1**

2888

**Sample Output 1**

500 = 5

100 = 3

50 = 1

20 = 1

10 = 1

5 = 1

2 = 1

1 = 1

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8.During weekends, students learn sports and games such as basketball, football, tennis and badminton. Create a class named Physical Education Director(PED) to include the following fields: Name, sports\_taught, timing and no\_of\_students who have joined that sport. Create another class sport\_details with the following instance variables: basketball\_fees, football\_fees, tennis\_fees and badminton\_fees and an array containing the count of the students who have joined in each course. Assuming a student can join for more than one sport, define a method calculatefee() to read the number of sports learned by each student and the fees for those sports and thus calculate the total amount to be paid by the student. Another method should also be defined to find the monthly income of the PED.

Program should contain the following classes

PED -- which represents the Physical Education Director

Sports\_details -- which contain the sport wise fees

Student -- which contains the student details with calculatefee()

You can assume the sport fees of each sport as follows

basketball\_fees -- 100

football\_fees -- 200

tennis\_fees -- 300

badminton\_fees -- 400

**Input Format**

Get the details of 4 Physical Education Directors(PED) (name, time, sport) in separate lines

Following line specifies number of student

Following line specifies name of the student

In the following lines list of sports and enroll status of the student

**Output Format**

Display Fees of each student and Salary of each Physical Education Director

**Sample Input 1**

Praveen

12:00PM

tennis

Surya

1:00PM

basketball

Vignesh

3:00PM

football

wwwww

4:00PM

badminton

3

Kaaviya

1

1

0

0

Nisha

1

0

0

1

Sujatha

0

1

1

0

**Sample Output 1**

Student

Name: Kaaviya Fees: 300

Name: Nisha Fees: 500

Name: Sujatha Fees: 500

PED

Name: Praveen Salary 300

Name: Surya Salary 200

Name: Vignesh Salary 400

Name: wwwww Salary 400

9.Hari is a civil engineer who is designing a fountain in square shape with water sprinklers in the edges with n number of steps. He needs to draw a sketch of the fountain in top view with the step number at the edges of the square.

Write a program to help him in printing the pattern with n number of steps.

**Input Format**

Input is an positive integer describing the step levels of the fountain.

**Output Format**

Output consists of the pattern of numbers as described in the question for n number of step levels.

**Sample Input 1**

5

**Sample Output 1**

1 1

2 2

3 3

4 4

5

4 4

3 3

2 2

1 1

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**10.Lucky Winner**

It was the inaugural ceremony of "Fantasy Kingdom" Amusement park and the park Management has announced some lucky prizes for the visitors on the first day. Based on this, the visitors whose ticket number has the last digit as 3 or 8, are declared as lucky winners and attracting prizes are awaiting to be presented for them.

Write a program to find if the last digit of the ticket number of visitors is 3 or 8.

**Input Format**

First line of the input is an integer that corresponds to the ticket number.

**Output Format**

Output should display as "Lucky Winner" if the last digit of the ticket number is 3 or 8. Otherwise print "Not a Lucky Winner".

**Sample Input 1**

43

**Sample Output 1**

Lucky Winner

**Sample Input 2**

41

**Sample Output 2**

Not a Lucky Winner

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11.Dora recently joined in MATHS club in her college. On the first day, she got an assignment as a part of the ice-breaking activity. She needs to display the prime numbers in the given range. Help Dora her first assignment by writing a suitable program.

**Input Format**

The input consists of a number(N)

**Output Format**

Prime numbers upto N separated by space

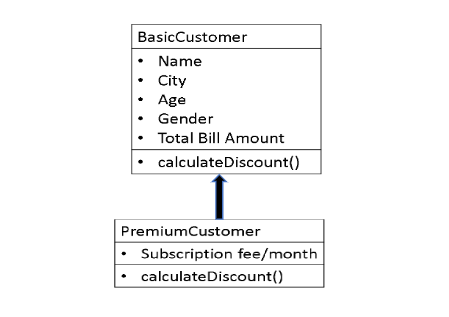
**Sample Input 1**

20

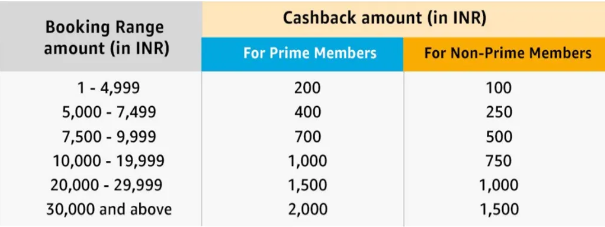
**Sample Output 1**

2 3 5 7 11 13 17 19

12.You are in an Online shopping portal. It has two types of members, **Basic**and**Premium.**Their relationship is shown in the inheritance diagram.



Each type of member gets a specific cashback amount for each order falling in a defined range. Details are given as below.



13.Use Inheritance and Overriding and write a program to Calculate the cashback amount **calculateDiscount()**, the customer gets for the Bill Amount **BA**.

**Input Format**

First line of Input represents Name.

Second line of Input represents City.

Third of Input represents Age.

Fourth line of Input represents Gender.

Fifth line of Input represents Total Bill Amount.

Sixth line of Input represents 0 or 1 (0 for Basic Customer and 1 for Premium Customer)

if **Premium Customer**

Seventh line of Input represents Subscription amount.

**Output Format**

First line of Output represents Name.

Second line of Output represents City.

Third line of Output represents Age.

Fourth line of Output represents Gender

Fifth line of Output represents Total Bill Amount.

if**Premium Customer**

Sixth line of Output represents Subscription Amount.

Seventh line of Output represents Cash Back Amount.

If **Basic Customer**

Sixth line of Output represents Cash Back Amount.

**Sample Input 1**

Joey

cbe

3

male

2000

0

**Sample Output 1**

Joey

cbe

3

male

2000

100

**Sample Input 2**

Joey

cbe

3

male

2000

1

250

**Sample Output 2**

Joey

cbe

3

male

2000

250

200

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14.Create class MovieRater with following characteristics.

**Data members:**

int year – to store the year of release of a movie.

String title – to store the title of the movie.

float rating – to store the popularity rating of the movie. (minimum rating = 0.0 and maximum rating = 5.0)

**Member Methods:**

Default constructor to initialize numeric data members to 0 and String data member to "".

accept - Read the value of a year, title and rating from the console. The return type of this method is void.

display - Displays the title of the movie and a message based on the rating as per the table below.

**RATING MESSAGE TO BE DISPLAYED**

0.0 to 2.0 Flop

2.1 to 3.4 Semi-hit

3.5 to 4.5 Hit

4.6 to 5.0 Super Hit

**Input Format**

The first line of the input consists of the year in which the movie was released.

The second line of the input consists of the movie title.

The third line consists of the rating.

**Output Format**

The first line of the output prints the movie title.

The second line displays the message based on the table.

Refer sample input and output for formatting specifications.

**Sample Input 1**

2004

abc

2.0

**Sample Output 1**

abc

Flop

**Sample Input 2**

2008

xyz

3.2

**Sample Output 2**

xyz

Semi-hit

**Sample Input 3**

2016

abc

4.2

**Sample Output 3**

abc

Hit

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15.After attending maths class, Karthick found an interesting link between a number and its proper divisors. The sum of proper divisors of a number is equal to that number itself. Using his mathematical knowledge he found the smallest number is 6, which is the sum of 1, 2, and 3(1, 2 and 3 are proper divisors of 6). So he wants to check other numbers too. Help Karthick by writing a program to simplify his work.

**Input Format**

The input consists of a number.

**Output Format**

Number followed by Perfect number / Not perfect number

**Sample Input 1**

6

**Sample Output 1**

6 Perfect number

**Sample Input 2**

9

**Sample Output 2**

9 Not perfect number

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16.Write a program for triangular multiplication table for 0 to N.

**Input Format**

Input to get N.

**Output Format**

Display the triangular multiplication table as shown in the sample output.

**Constraints**

N (integer type).

**Sample Input 1**

6

**Sample Output 1**

0

0 1

0 2 4

0 3 6 9

0 4 8 12 16

0 5 10 15 20 25

0 6 12 18 24 30 36

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17.Janu wants to check Ankit's mathematical knowledge. Janu will tell an number, Ankit needs to calculate the sum of the cubes of its digits and check whether it is equal to the given number. If it is equal Ankit should tell the number and "Hi Janu", if it is not equal he should tell the number and "Bye Janu”

**Input Format**

The input consists of a number.

**Output Format**

A number followed by "Hi Janu" or "Bye Janu" as shown in the sample output

**Sample Input 1**

153

**Sample Output 1**

153 Hi Janu

**Sample Input 2**

151

**Sample Output 2**

151 Bye Janu

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18.An art therapist conducts a workshop to teach the importance of colors in every aspect of life. According to her, the priority of each problem/situation is unique. So it is important to prioritize our problems and solve it level by level.

For demonstrating this, she gave a sheets to every participant and access to unlimited number of color pencils. Each sheet had concentric squares of varied sizes. The participants were asked to color the squares in the each sheet with different colors. Suppose a participant got a sheet of 5 squares, he/she has to use 5 colors.

Write a code to implement this pattern.

**Input Format**

Single line input which has a positive integer.

**Output Format**

Output displays the concentric squares as shown in sample test case.

**Sample Input 1**

6

**Sample Output 1**

6 6 6 6 6 6 6 6 6 6 6

6 5 5 5 5 5 5 5 5 5 6

6 5 4 4 4 4 4 4 4 5 6

6 5 4 3 3 3 3 3 4 5 6

6 5 4 3 2 2 2 3 4 5 6

6 5 4 3 2 1 2 3 4 5 6

6 5 4 3 2 2 2 3 4 5 6

6 5 4 3 3 3 3 3 4 5 6

6 5 4 4 4 4 4 4 4 5 6

6 5 5 5 5 5 5 5 5 5 6

6 6 6 6 6 6 6 6 6 6 6

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19.Write a program to print the numbers in triangle format as displayed in the sample output.

**Input Format**

Input represents the maximum rows to be printed.

**Output Format**

1

1 1

1 2 1

1 3 3 1

Refer Sample Output. There is a space at the end of each row.

**Constraints**

Integers only.

**Sample Input 1**

6

**Sample Output 1**

1

1 1

1 2 1

1 3 3 1

1 4 6 4 1

1 5 10 10 5 1

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20.Indhu, a receptionist of Vijay Park Inn rearranges the flower in the reception daily. Vikram, manager of the same hotel writes a program to display the flower arrangement on the reception TV screen. Today, Indhu arranged the flowers as shown in the sample output. Help Vikram to write a program to display the pattern.

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**Input Format**

Number of rows in first half of the pattern

**Output Format**

Display the pattern as shown in sample output

**Sample Input 1**

5

**Sample Output 1**

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21.Sameera, a receptionist of Regency hotel rearranges the flower in the reception daily. Arjun, manager of the same hotel writes a program to display the flower arrangement on the reception TV screen. Today, Sameera arranged the flowers as shown in the sample output. Help Arjun to write a program to display the pattern.

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**Input Format**

Number of flowers in first half of the arrangement.

**Output Format**

Display the pattern as shown in sample output.

**Sample Input 1**

5

**Sample Output 1**

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22.Ankit wants to arrange the flowers in a certain pattern to attract customers. Write a program to print an Inverted full pyramid pattern using stars

**Input Format**

Input consists of a single integer n.

**Output Format**

The output consists of the inverted pyramid pattern using stars.

**Sample Input 1**

5

**Sample Output 1**

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23.Write program to print hollow square pattern as shown in sample output.

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**Input Format**

Number of rows

**Output Format**

Pattern as shown in sample output

**Sample Input 1**

4

**Sample Output 1**

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24.Write a program to print the diamond pattern using star.

**Input Format**

To get the N number of rows.

**Output Format**

Output the diamond pattern.

**Constraints**

N > 0.

**Sample Input 1**

5

**Sample Output 1**

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**25.Problem statement**

Write a program to print the following pattern.

7 6 5 4 3 2 1

7 6 5 4 3 2

7 6 5 4 3

7 6 5 4

7 6 5

7 6

7

**Input Format**

Input consists of one integer.

**Output Format**

Pattern as shown in output.

**Sample Input 1**

4

**Sample Output 1**

4 3 2 1

4 3 2

4 3

4

**26.Problem statement**

Write a program to print the following pattern.

1

2 1

3 2 1

4 3 2 1

5 4 3 2 1

**Input Format**

Input consists of one integer.

**Output Format**

Pattern shown in sample output.

**Sample Input 1**

3

**Sample Output 1**

1

2 1

3 2 1

**27.Problem statement**

Keerthi, a receptionist of Hotel Benzz Park rearranges the chairs in the reception daily. Suresh, manager of the same hotel writes a program to display the arrangement on the reception TV screen. Today, Keerthi arranged the chairs as shown in the sample output(like Z shape). Help Suresh to write a program to display the arrangement pattern.

**Note :** Each chair has a number and there is more than one chair with the same number.

1 2 3 4 5

4

3

2

1 2 3 4 5

**Input Format**

Total number of chairs in first line.

**Output Format**

Display Z pattern as shown in the sample output.

**Sample Input 1**

5

**Sample Output 1**

1 2 3 4 5

4

3

2

1 2 3 4 5

**28.Problem statement**

Write a program to print the following pattern.

1

2 2

3 3 3

4 4 4 4

5 5 5 5 5

6 6 6 6 6 6

7 7 7 7 7 7 7

**Input Format**

Refer the sample input and output for specifications.

**Output Format**

Refer the sample input and output for specifications.

**Sample Input 1**

4

**Sample Output 1**

1

2 2

3 3 3

4 4 4 4