Programming Fundamentals

Assignment 2

Dated: 26-2-2020 **BS-SE'19, Morning**

Deadline: Sunday, 1-3-2020, before 11:59 pm

Note: Add/drop students can skip this assignment. It is not mandatory for them to submit.

Submission guidelines:

You have two options:

1) Submit your main (.cpp) file only (ONLY ONE FILE)
2) Copy paste your code to Notepad and make a **.txt** file. Submit this file.

If anyone is found submitting zipped folder or solution files then I'll mark zero. Email at: natalia@pucit.edu.pk

Problem

Write a C++ program that prints BINARY_MAGIC'7 pattern on the console. There will always be 7 rows of the pattern. Row 1 will always contain 1 entry, row 2 will contain 2 entries, and the pattern length keeps on expanding by 1. Row 1,3,5, and 7 will always contain asterisks (*). The other rows, also known as **dynamic rows**, are filled programmatically by using the following logic.

The program should take two integers **A** and **B** as an input from the user. The program should then perform the following operation and store the result in integer variable named **result**:

NOT(A AND B) XOR B

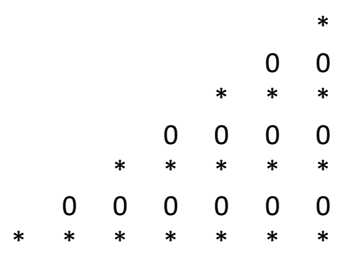
Declare another integer variable named Decision. The value of this variable defines whether 0s or 1s will be printed in the respective **dynamic row** of magic pattern. See figure below:

Row 1							*
Row 2						0	0
Row 3					*	*	*
Row 4				0	0	0	0
Row 5			*	*	*	*	*
Row 6		0	0	0	0	0	0
Row 7	*	*	*	*	*	*	*

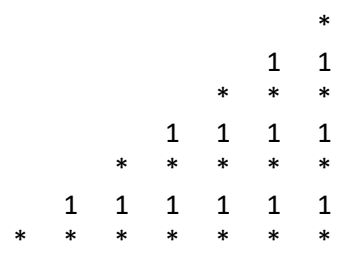
Using conditional statements (if else structure), implement the following logic to print the required pattern.

- If **result** lies in the range 0-20 (inclusive of 0 and 20), then set **decision** to 1.
- If **result** lies in the range 21-50 (inclusive of 21 and 50), then set **decision** to 0.
- In either case, set **decision** to -1.

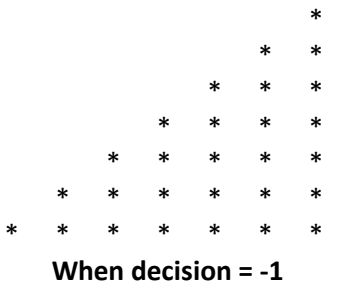
The program should then start printing the magic pattern. The logic of printing Row 1, 3, 5, and 7 will be the same every time. However, dynamic rows will be filled by checking the value of **decision** variable. If the **decision** is equal to 1 then dynamic rows should be filled with 1s. If the **decision** is equal to 0 then dynamic rows should be filled with 0s. If the **decision** is equal to -1 then dynamic rows should be filled with *. The sample patterns that will be printed in the mentioned cases are shown below:



When decision = 0



When decision = 1



When decision = -1