ENGG1111 Computer Programming and Applications

Assignment 1 Pattern Generator

Due date: 17-March-2018, 23:00. No late submission is allowed.

I. Problem Description

This assignment consists of THREE parts. In each part, you are going to develop a small program to generate the pattern based on the user input.

There are 12 patterns with ID 0 to 11 as defined in the table below. Each pattern is a 4x4 matrix (4 rows and 4 columns) with entries * OR space (for better readability, each space is marked as "_" character in the table).

ID:0 *___ **__ ***_ ****	ID:1 ___* __** _*** ****	ID:2 **** _*** __** ___*	ID:3 **** ***_ **__ *___
ID:4 **__ **__ **__ **__	ID:5 __** __** __** __**	ID:6 **** **** ____ ____	ID:7 ____ ____ **** ****
ID:8 **** **** **** ****	ID:9 ____ _**_ _**_ ____	ID:10 **** *__* *__* ****	ID:11 ____ ____ ____ ____

Part I (30 marks)

Write a program that accepts an integer from user, and outputs the corresponding pattern. You may assume the user input is an integer between 0 and 11 (inclusive).

Test Case	Input	Output
1	1	* ** *** ****
2	5	** ** ** **
3	11	

4	9	** **

Part II (35 marks)

Modify your program in Part I, so that it will accept a list of integers. The first parameter indicates the number of patterns to be output, followed by pattern ID(s) to be output.

Your program should output the pattern(s) in a column, i.e. it prints the list of pattern(s) vertically.

Test Case	Input	Output
1	1 1	* ** *** ****
2	2 4 8	** ** ** ** **** **** **** ****
3	3 0 10 3	* ** *** **** **** * * * * **** **** *** ** *

Part III (35 marks)

Modify your program in part II, so that the patterns will be printed to a table with M rows and 4 columns. The first input of the program are M, and then a list of pattern IDs to be generated. The pattern IDs are inputted from left to right and top to bottom.

Case	Input	Output
1	1 10 11 0 1	**** * * * * ** ** * * *** *** **** ********
2	2 1 10 10 0 2 10 10 3	********** *** ** *** **** ** **** ********** ********** **** ** **** *** ** *** **********
3	4 8 6 6 8 4 11 11 5 4 11 11 5 8 7 7 8	********** ********** **** **** **** **** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** **** **** **** **** ********** **********

II. Submission

Virtual Programming Lab (VPL) will be setup for each part. However, we encourage you to test your program with your own test cases before submit your program. Your program should generate the output based on the specification, i.e. without extra text/space. We may mark your program with test cases different from those found in VPL.