

CS101 - Group Discussion 1

Last 2 digits of roll nums: _____

Instructions: As a group, work together to answer all the questions on the worksheet. Discuss your approaches and make sure everyone understands the solution.

1. Write a complete C program that asks the user to enter a positive integer.
 - a. If the user enters 0 or a negative number, the program should print an error message like "Please enter a positive number." and stop.
 - b. If the input is valid, use a loop to print all the numbers that are divisible by 7, starting from 1 up to and including the input number.
 - c. What among for / while / do-while loops is most appropriate here? Why?

2. Write the output of the following program.

```
#include <stdio.h>
int main() {
    for (int i = 1; i <= 3; i++) {
        for (int j = 1; j <= 3; j++) {
            if (i%2 ^ j%2) printf("0 ");
            else printf("X ");
        }
        printf("\n");
    }
    return 0;
}
```

Recall, ^ is the bitwise XOR operator. Filling the following **Trace Table** would be helpful.

i	j	i%2	j%2	i%2 ^ j%2	output
1	1	1	1	0	X
...	...				

3. The C programming language was developed around 1972. As a group, choose one of the following prompts. Discuss it and write down 3-4 bullet points summarizing your main arguments. You'll then present it as a 2-minute argument to the class.
 - a. Why is a 50-year-old language like C still a mandatory part of a modern CS education? What lessons (e.g., about memory, performance, or how computers work) do you expect to learn from C that will remain useful for you, regardless of what language you end up using in your job?
 - b. Imagine you used a time machine to meet Dennis Ritchie in 1972 while he was designing C. Based on what you've learned so far (and perhaps things you've heard about modern languages), what one feature would you convince him to change or add to make life easier for you? How would your change work?