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GAME OF LIFE

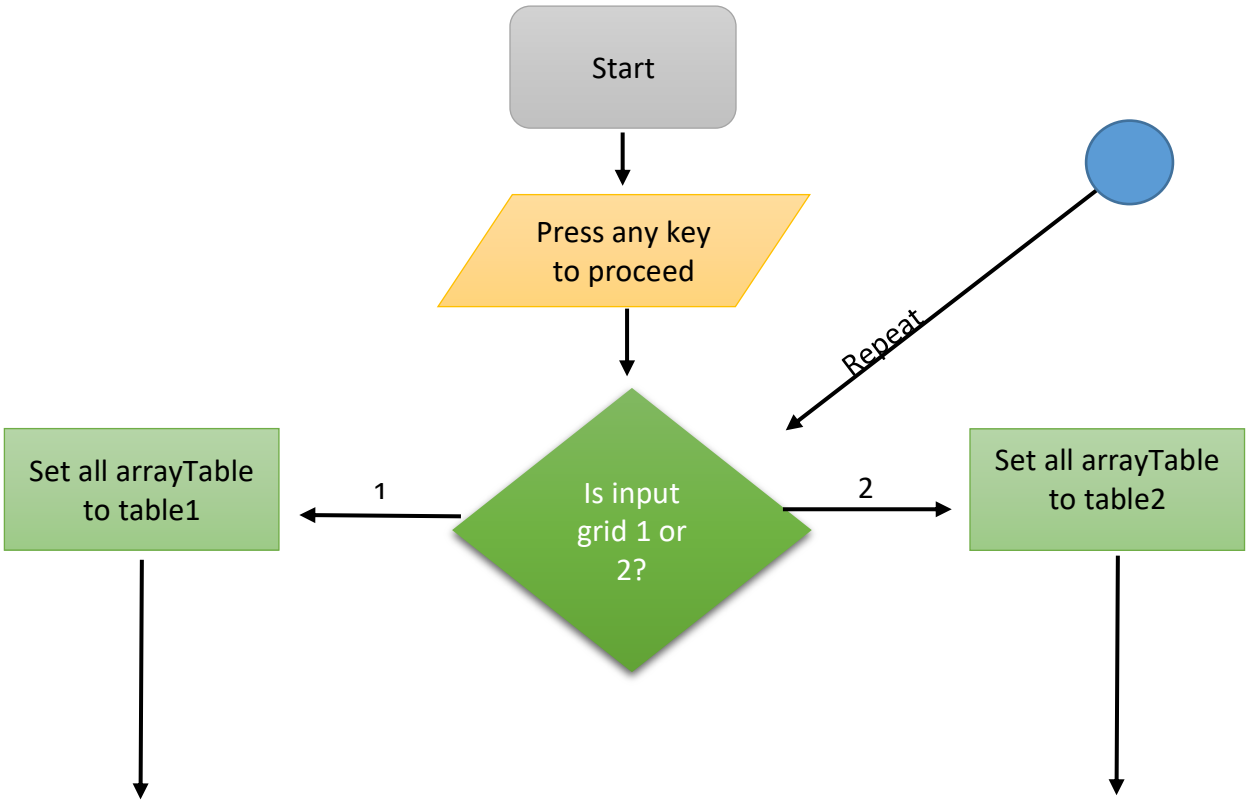
I. Introduction

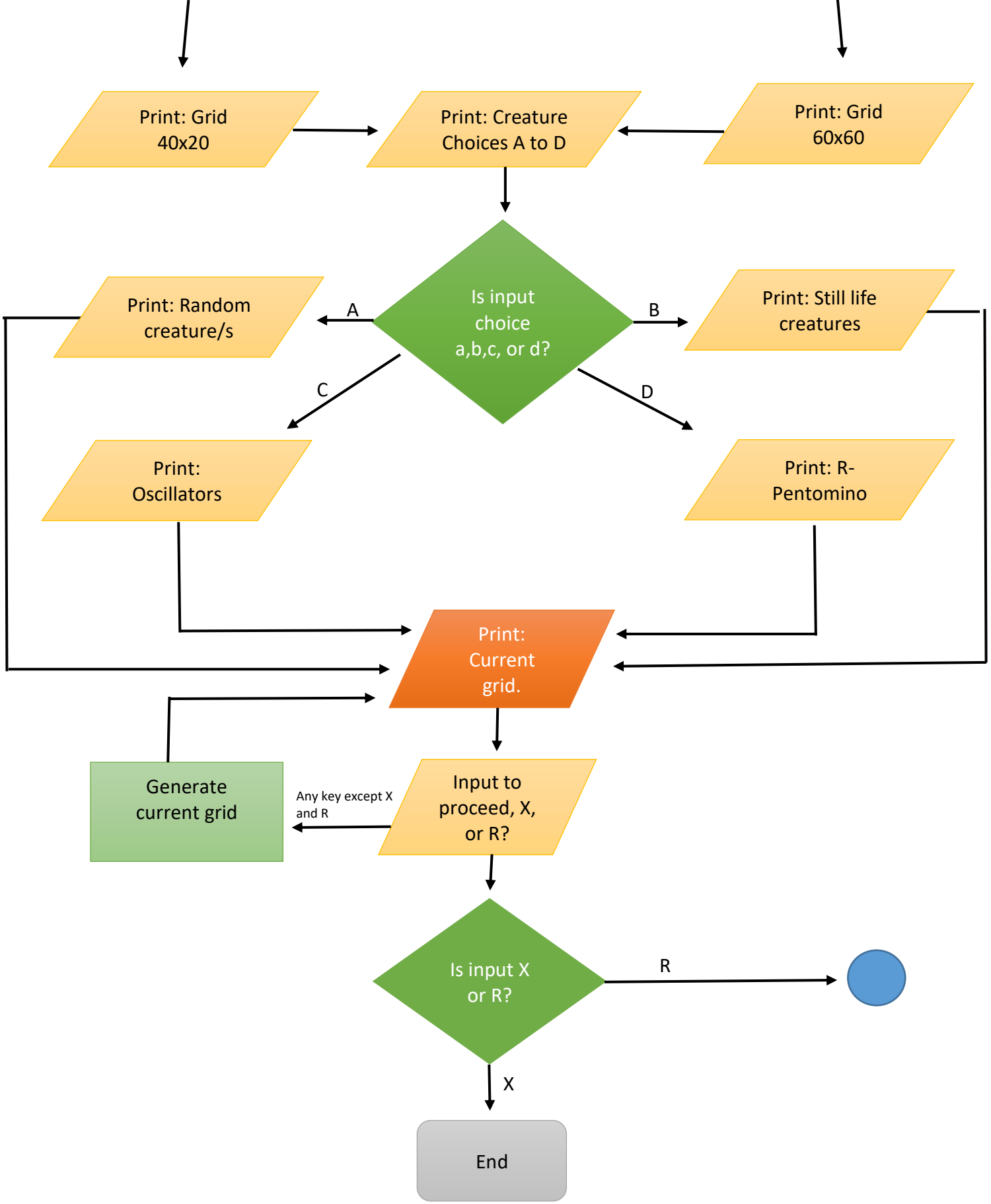
The Game of Life by John Conway is a “cellular automaton” that includes cells that evolves generation by generation forming complex patterns. I created the automaton using C and I programmed it in 2-Dimensional array.

II. Description of the Data Structures

I organized my data with functions. I used typedef keyword in order to declare the core of my program which is the 2D arrayTable. I used typedef because it can make my program more portable especially when I’m calling out the arrayTable. The major variables in my program are the printTable, gridChoice, neighborValue, countNeighbor, and calculate. These functions are the core of my program and the remaining functions are just the composition of commands and functions to make it organized. There are also multiple functions destined for the error handling of my program. I used about 21 functions in order to arrange and make my program run with a simple main function.

III. Flowchart




Print: Grid 40x20
Print: Creature Choices A to D
Print: Grid 60x60
Is input choice a,b,c, or d?
A
B
C
D
Print: Random creature/s
Print: Still life creatures
Print: Oscillators
Print: R-Pentomino
Print: Current grid.
Generate current grid
Any key except X and R
Input to proceed, X, or R?
Is input X or R?
R
X
End

IV. Error Handling

My error handling for the program is that the user should press the specified key depending where he or she is on the program. Every window will designate an instruction wherein the user will be asked to choose either from the choices presented or follow the command given. Failure to comply with the instruction will cause the program to end. For the title page of the program, pressing any key will show the menu for grid choice. In the grid choice menu, the user will be asked to choose either 1 or 2, for the 40x20 and 60x60 grid, respectively. If the user entered any input aside from 1 or 2, the program will end. It's the same for the menu choices all throughout the program. As for the printing of generations, the user can click any key to proceed to the next generation, except for X and R. X is allotted for exiting the program if the user wishes to exit the program. R is for returning to the grid choice menu.

V. Application Manual

How to Use the Program:

1. Start Menu:
   - Click any key to proceed to grid choice menu.
   - Start menu has a trigger button, you don't have to press enter because the program will immediately proceed to the next window after you click any button.

2. Grid Choice Menu:

   Choice 'A': Random Creature/s
   Choice 'B': Still Life Creatures
   Choice 'C': Oscillators
   Choice 'D': R-Pentomino

   - Choose any of the choices above and press enter. The window will proceed to print the creature/s you chose.

3. How to Maneuver the Grid:

- Press any key to proceed to the next generation. (Except for X and R).
- Press X to exit the program immediately.
- Press R to return to Grid Choice Menu.

Remember that all of the buttons except for X and R will generate the next generation of the creature. It is a trigger button so you don't have to press enter. Please be cautious because when you click X, the program will end, and if you press R on the other hand, the program will bring you back to grid Choice menu.