Assignments - I

(You must use any of the following languages: `C`, `C++`, and `Java`.)

1. Implement *Life*. (This is a tribute to Conway, who died of complications from COVID-19).
   - Play with still lives: Loaf and Boat.
   - Play with oscillators: Toad and Beacon.
   - Play with spaceships: Glider and Light Weight Spaceship.
2. Given a positive integer n where $n = 2^k - 1, k \in \mathbb{Z}^+$. Considering n an user input, create the binary search tree (BST) from these n integers, such that,
   - The height of BST is minimum;
   - The height of BST is maximum.
3. Given a positive integer n, find the maximum and the minimum heights of AVL trees with n nodes considering
   - The height of an AVL tree with a single node is 0.
   - The height of an AVL tree with a single node is 1.
4. Write a program to add two large integers.
5. Write a program to add two large real values.
6. Write a program to multiply two large integers.
7. Write a program to multiply two large real values.