

Shreyas Marwah

2310110604

lab2 csd204

Q1

The parent process creates **N** child processes using `fork()`, where **N** is between 1 and 10. Each child prints its **PID** and exits, while the parent waits for each child to finish before printing its own message and exiting. As **N** increases, more child processes are created. Since the parent waits for each child, no **zombie processes** are left behind.

Q2

The parent and child processes both sort the same integer array separately using different sorting algorithms. The parent waits for the child to complete using `wait()`, ensuring it does not terminate before the child. The program demonstrates two special process states: **zombie** and **orphan processes**.

Q3

The parent process first sorts an integer array and then creates a child process using `fork()`. The child replaces itself using `exec()` to run another program that performs a **binary search** on the sorted array. The parent passes the sorted array as command-line arguments, and the index of the target integer is printed.