

## Programming Assignment #2

Due Date: 17<sup>th</sup> September, 2021

Total Marks : 30

### 1. DESIGN OF A MINI SHELL

Statement of the problem: The mini shell is designed to simulate the *bash* shell of UNIX kernel. In the simulation try to include as many functionalities as possible of the *bash* shell. The simulation should not only work well for LINUX external commands, but also include as many internal commands as possible.

Approach to be taken and elaboration:

The basic program structure is shown below.

Design Steps:

- a. To execute UNIX external commands. To do this system, call `execv( )` has to be used.
- b. To make provision for all kinds of redirection possible, `input(<)`, `output(>)` and `append(>>)`.

- c. To make provision for piping (single level), in process creating two-child processes and executing commands separated by pipe ( | ).
- d. To ensure additional functionalities that are not executed by `execv( )` such as environment variables, `cd`(all variations), history and exit commands.

Please take a look at the flowchart that would help you in the design process.

