

MiniShell - Theory Answers

1. What is a Shell?

A shell is a command-line interface that allows users to interact with the operating system.

2. Role of fork(), exec(), wait():

fork() creates child processes.

exec() runs a program in the child process.

wait() makes the parent wait for the child to finish.

3. Lex & Yacc:

Lex = lexical analyzer

Yacc = parser generator

4. Command execution:

Shell parses input → fork() → execvp() → parent waits

5. Built-in commands: cd, exit

6. Pipes:

Output of one command → input of another

7. I/O Redirection:

Use file descriptors to read/write files instead of terminal

8. Challenges:

Parsing, process management, file descriptors, resource leaks