

## MiniShell - Theory Answers

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### 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