

1.

```
1  #include <stdio.h>
2  #include <stdlib.h>
3  #include <unistd.h>
4  #include <sys/wait.h>
5
6  int main(int argc, char *argv[]) {
7      if (argc < 2) {
8          printf("Please enter UNIX command\n");
9          return 1;
10     }
11
12     pid_t pid = fork();
13     if (pid < 0) {
14         perror("Error: cannot fork");
15         exit(1);
16     } else if (pid == 0) {
17         execvp(argv[1], &argv[1]);
18         perror("execvp failed");
19         exit(1);
20     } else {
21         wait(NULL);
22     }
23
24     return 0;
25 }
```

```
demonstem@demonstem:/mnt/c/Users/Tonza/Desktop/Code/Y3S2/OS/Act4$ ./1
Please enter UNIX command:
demonstem@demonstem:/mnt/c/Users/Tonza/Desktop/Code/Y3S2/OS/Act4$ ./1 date
Mon Feb  3 19:58:12 +07 2025
demonstem@demonstem:/mnt/c/Users/Tonza/Desktop/Code/Y3S2/OS/Act4$ ./1 head -1 /etc/passwd
root:x:0:0:root:/root:/bin/bash
demonstem@demonstem:/mnt/c/Users/Tonza/Desktop/Code/Y3S2/OS/Act4$ ./1 cal 12 2021
    December 2021
Su Mo Tu We Th Fr Sa
                1  2  3  4
 5  6  7  8  9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30 31
```

2.

```
1  int main()
2  {
3      char input[256];
4      char **tokens;
5      char delim[] = " \t\n";
6      int numtokens;
7      int run = 1;
8      while (run)
9      {
10         printf("mysh >");
11         /*
12          After reading user input, do these steps
13          1. use tokenize() function to get command
14          2. fork a child process
15          3. child use execvp() to run command
16          4. parent call wait() until user enter "exit"
17          */
18         fgets(input, 256, stdin);
19         fflush(stdout);
20         numtokens = tokenize(input, delim, &tokens);
21         if (numtokens <= 0)
22         {
23             continue; // Skip empty input
24         }
25         if (strcmp(tokens[0], "exit") == 0)
26         {
27             free(tokens);
28             break; // Exit shell on "exit" command
29         }
30         pid_t pid = fork();
31         if (pid < 0)
32         {
33             perror("Fork failed");
34             free(tokens);
35             continue;
36         }
37         else if (pid == 0)
38         {
39             // Child process executes command
40             execvp(tokens[0], tokens);
41             perror("Command failed");
42             exit(1);
43         }
44         else
45         {
46             // Parent process waits for child to finish
47             wait(NULL);
48         }
49
50         free(tokens);
51     }
52
53     return 0;
54 }
```

```
demonstem@demonstem:/mnt/c/Users/Tonza/Desktop/Code/Y3S2/OS/Act4$ ./2
mysh >date
Mon Feb  3 20:07:34 +07 2025
mysh >cal 12 2021
    December 2021
Su Mo Tu We Th Fr Sa
                1  2  3  4
 5  6  7  8  9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30 31

mysh >exit
demonstem@demonstem:/mnt/c/Users/Tonza/Desktop/Code/Y3S2/OS/Act4$
```

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