CSN-361

Computer and Networks Laboratory

Assignment 2

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Problems

1. Write a socket program in C to connect two nodes on a network to communicate with each other, where one socket listens on a particular port at an IP, while other socket reaches out to the other to form a connection.

Solution

Main listener Loop

```
while (1)
    {
        new_socket = accept(server_fd, (struct sockaddr *)&address, (socklen_t *)&addrlen);
        if (new_socket < 0)
        {
            raise_error("accept");
        }
        valread = read(new_socket, buffer, 1024);
        printf("Client: %s\n", buffer);
        send(new_socket, connection_reply, strlen(connection_reply), 0);
        printf("Hello message sent\n");
    }
```

Dynamic Port Allocation

```
    while (bind(server_fd, (struct sockaddr *)&address, sizeof(address)) < 0)
    {
        address.sin_port = htons(++port);
    }
```

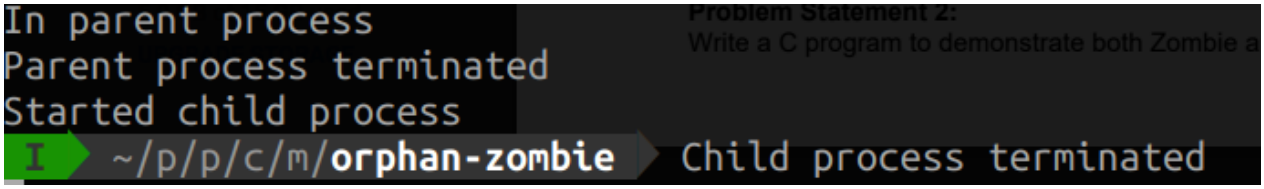
Server running on left side and client running on right side.

2. Write a C program to demonstrate both Zombie and Orphan process.

Orphan

```
    if (pid > 0)
    {
        printf("In parent process\n");
```

```
        printf("Parent process terminated\n");
    }
    else if (pid == 0)
    {
        printf("Started child process\n");
        sleep(5);
        printf("Child process terminated\n");
    }
```



Zombie

```
    if (child_pid > 0)
    {
        printf("Parent process started\n");
        sleep(5);
        printf("Parent process finished\n");
    }
    else
    {
        printf("Child process started and terminated\n");
        exit(0);
    }
```