ITMO University

The Faculty of Software Engineering and Computer Systems

System software basics

Practical task №6
Shell-programming

Variant 1

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Task:

In C and perl, implement client-server communication using the TCP protocol for data transfer.

BPMN schemes of functioning of developed programs should be developed.

UML sequence, class, activity, use case, deployment, state, component diagrams for developed programs in plantum notation should be developed.

The client must accept two or more arguments — the host name and directory names. The client establishes a TCP connection with the server using the specified host name, and then requests the contents of the specified directories from the server. The resulting list is output to standard output.

The server must provide the ability to simultaneously serve multiple clients. The protocol of interaction with the server is text.

UML Diagram
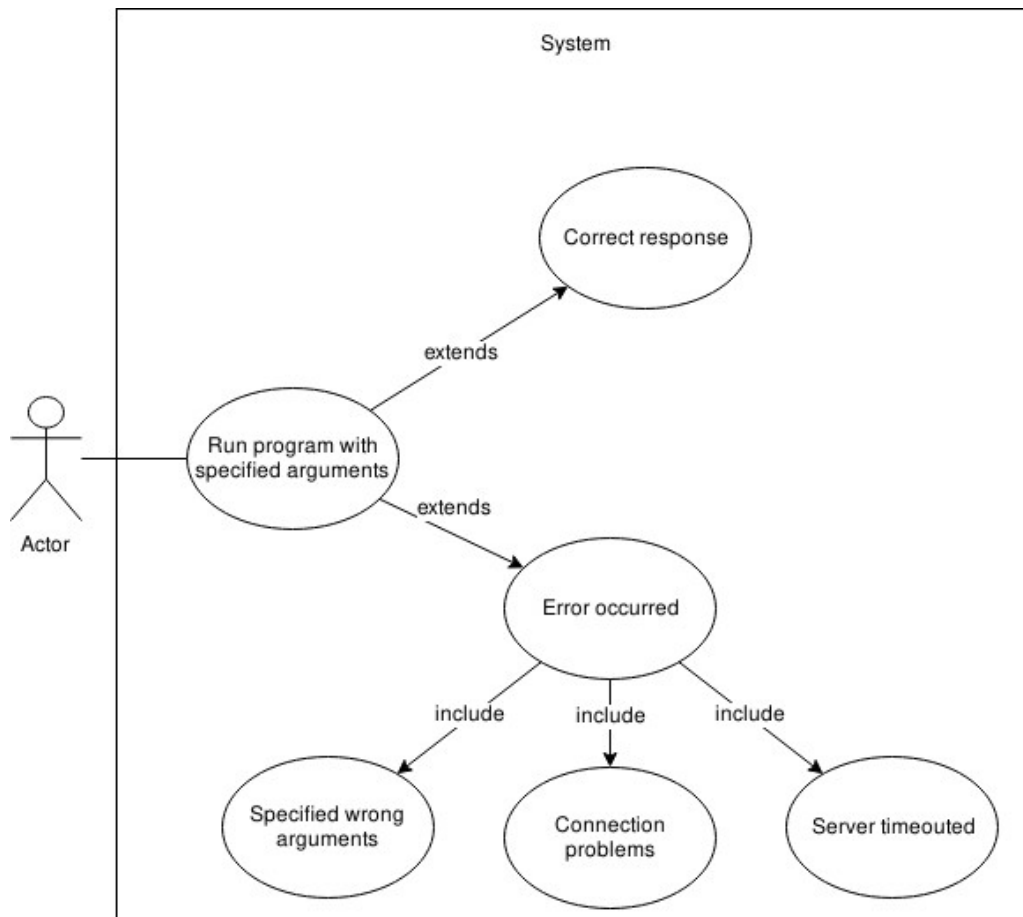
BPMN Scheme
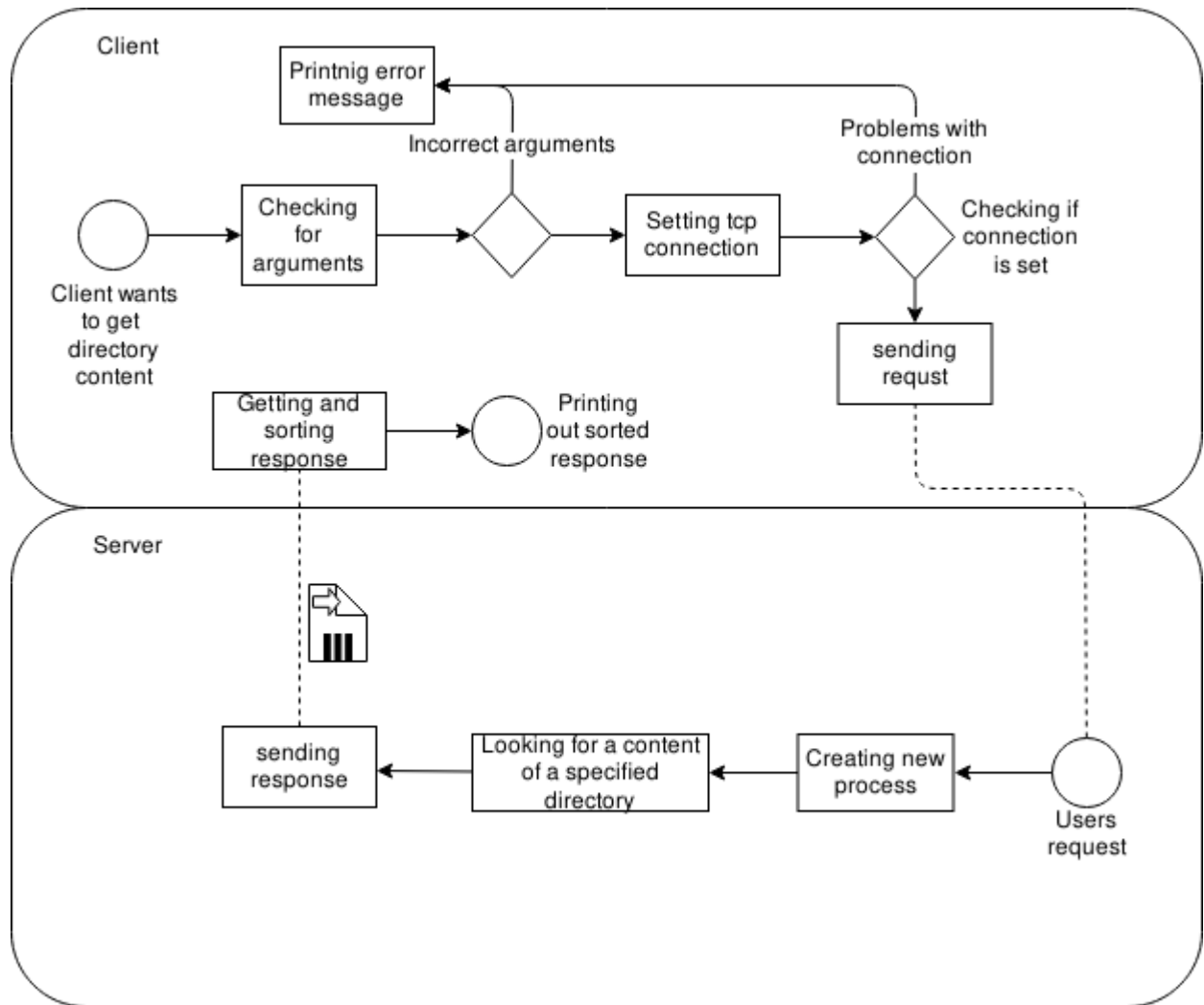
Source code:

```
int create_socket (int domain, int type, int protocol){
    int sockfd;
    if( (sockfd = socket(domain, type, protocol)) == 0)
        exit(EXIT_FAILURE);
    return sockfd;
}

int accept_socket(int master_socket, struct sockaddr_in * address, socklen_t*
address_len)
{
    int sock;
    if ((sock = accept(master_socket, (struct sockaddr*) address, address_len))
< 0)
        perror("[!] Error: accepting socket failed");
    return sock;
}
```