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1  // Author: Michael Royster
2  // Group D
3  // Email: micaher@okstate.edu
4
5  #include <stdio.h>
6  #include <stdlib.h>
7  #include <unistd.h>
8  #include <string.h>
9  #include <netdb.h>
10 #include <sys/socket.h>
11 #include <netinet/in.h>
12 #include <arpa/inet.h>
13 #include <sys/stat.h>
14 #include <sys/mman.h>
15 #include <fcntl.h>
16 #include <sys/wait.h>
17 #include <stdbool.h>
18 #include "Assistant.h"
19 #include "History.h"
20 #include "Query.h"
21 #include "Record.h"
22
23 #define QUERY_MAX sizeof(Query)
24 #define RECORD_MAX sizeof(Record)
25 #define PORT 8000
26 #define SA struct sockaddr
27
28 void query_server(int sockfd, Query send_query, Record *record);
29
30 int Assistant(){
31     printf("Client started..\n");
32     // Forking for Output
33     if(fork() == 0){
34         execlp("gnome-terminal", "gnome-terminal", "--", "./output", NULL);
35     }
36     else{
37         // Create socket
38         int sockfd, connfd;
39         struct sockaddr_in servaddr, cli;
40         sockfd = socket(AF_INET, SOCK_STREAM, 0);
41         if (sockfd == -1){
42             printf("Socket creation failed..\n");
43             exit(0);
44         }
45         else
46             printf("Socket successfully created..\n");
47
48         bzero(&servaddr, sizeof(servaddr));
49
50         // assign IP and Port
51         servaddr.sin_family = AF_INET;
52         servaddr.sin_addr.s_addr = inet_addr("10.203.72.5");
53         servaddr.sin_port = htons(PORT);
54
55         // Connect to server
56         if (connect(sockfd, (SA*)&servaddr, sizeof(servaddr)) != 0){
57             printf("Connection with server failed...\n");
58         }
59         else
60             printf("Connected to the server..\n");
61
62         // ===== SOCKET HAS CONNECTED TO SERVER - Now send request =====
63
64         int fd, fd2;
65         Query query;
66         Record record;

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67     Record *ptr_record = &record;
68
69     // Open manager pipe to read
70     char manager_pipe[] = "./ManagerPipe";
71     mkfifo(manager_pipe, 0666);
72     if ((fd = open(manager_pipe, O_RDONLY)) < 0)
73         perror("Assistant: Error opening...");
74
75     // Open assistant pipe for writing
76     char assistant_pipe[] = "./AssistantPipe";
77     mkfifo(assistant_pipe, 0666);
78     if ((fd2 = open(assistant_pipe, O_WRONLY | O_CREAT)) < 0)
79         perror("Assistant: assistant_pipe opening...");
80
81     while(1){
82         // Read from Manager
83         if(read(fd, &query, sizeof(Query)) < 0)
84             printf("Assistant: Error reading...\n");
85
86         if (strcmp(query.employee_name, "exit") == 0 && strcmp(query.job_title, "exit") == 0 && strcmp(
query.status, "ex") == 0){
87             Record exit_record;
88             strcpy(exit_record.employee_name, "exit");
89
90             // tell output terminal to end
91             if (write (fd2, &exit_record, sizeof(Record)) < 0)
92                 printf("Assistant: error terminating output terminal\n");
93
94             // tell server to end
95             send(sockfd, &query, sizeof(Query), 0);
96
97             break;
98         }
99
100        //Check History File
101        if(isInHistory(query)){
102            getFromHistory(query, ptr_record);
103        }
104        else{
105            // Send request to server after checking history file if necessary
106            query_server(sockfd, query, ptr_record);
107            writeToHistory(ptr_record);
108        }
109
110        // Write to Output terminal
111        if (write(fd2, &record, sizeof(Record)) < 0)
112            perror("Assistant: error writing...");
113
114    }
115
116    // Closing pipes and server
117    close(fd);
118    close(fd2);
119    close(sockfd);
120    wait(NULL);
121    printf("Assistant closed.\n");
122    }
123    return 0;
124 }
125
126 void query_server(int sockfd, Query send_query, Record *record){
127     Record temp;
128     int val;
129
130     send(sockfd, &send_query, sizeof(Query), 0);
131

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132     val = recv(sockfd, &temp, sizeof(Record), 0);
133     if(val == -1){
134         printf("Error recieving data..\n");
135     }
136
137     *record = temp;
138
```