CHUNGBUK NATIONAL UNIVERSITY

REPORT

운영체제 과제 #2

제출일 2022.03.23

학과 소프트웨어학과

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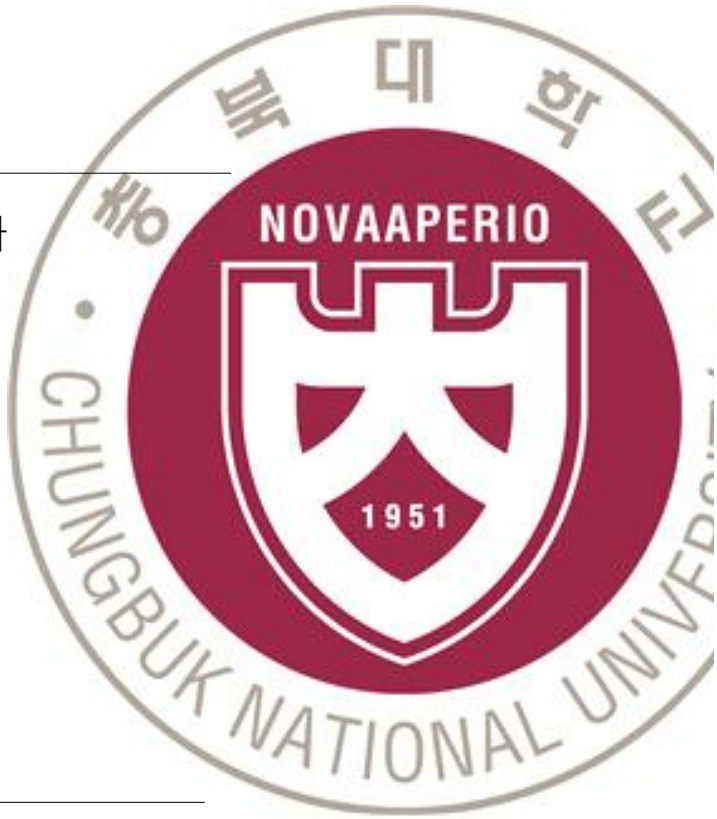
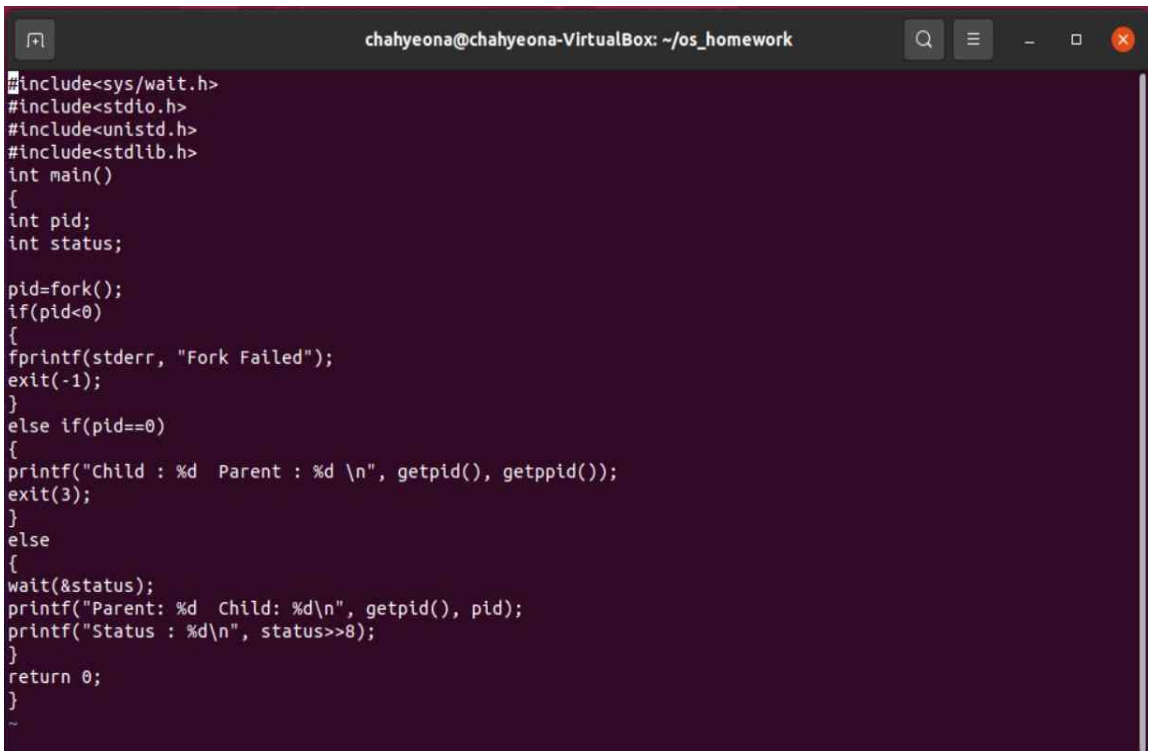


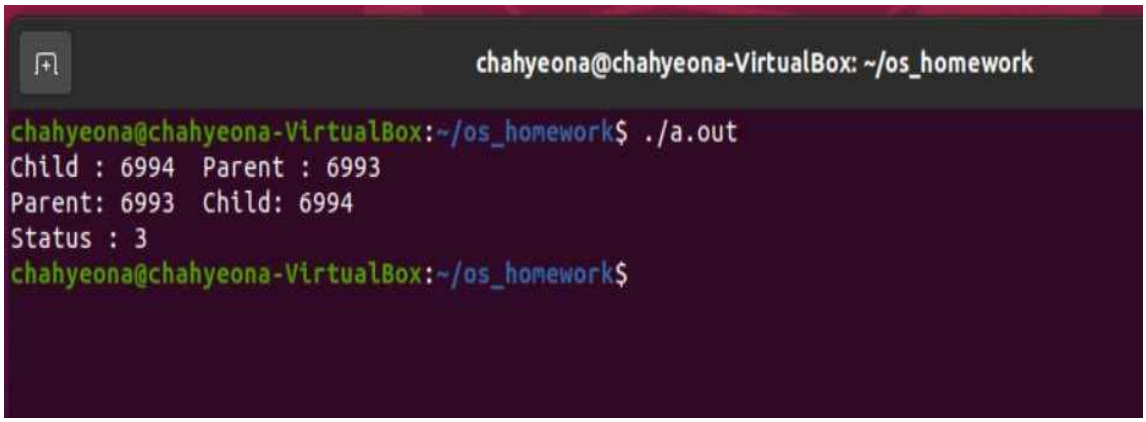
3장 강의노트의 모든 프로그램 실행해보기

1. UNIX/LINUX에서 새로운 프로세스를 fork하는 C프로그램

코드

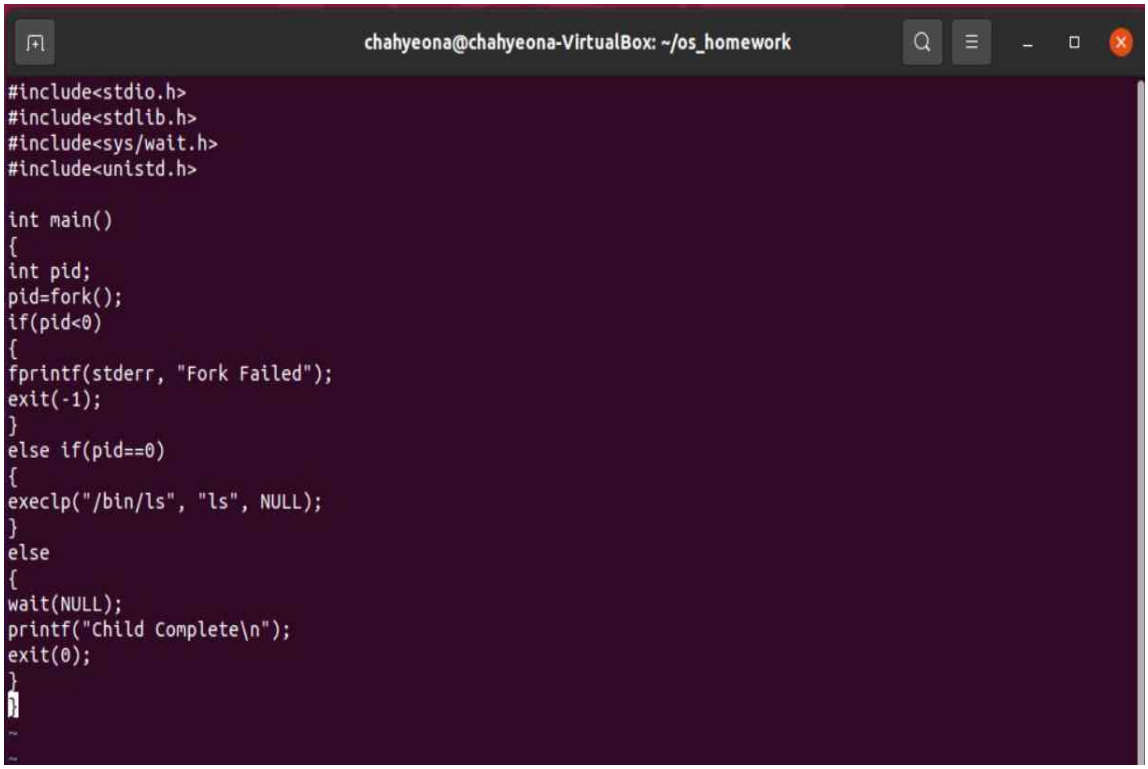


실행화면

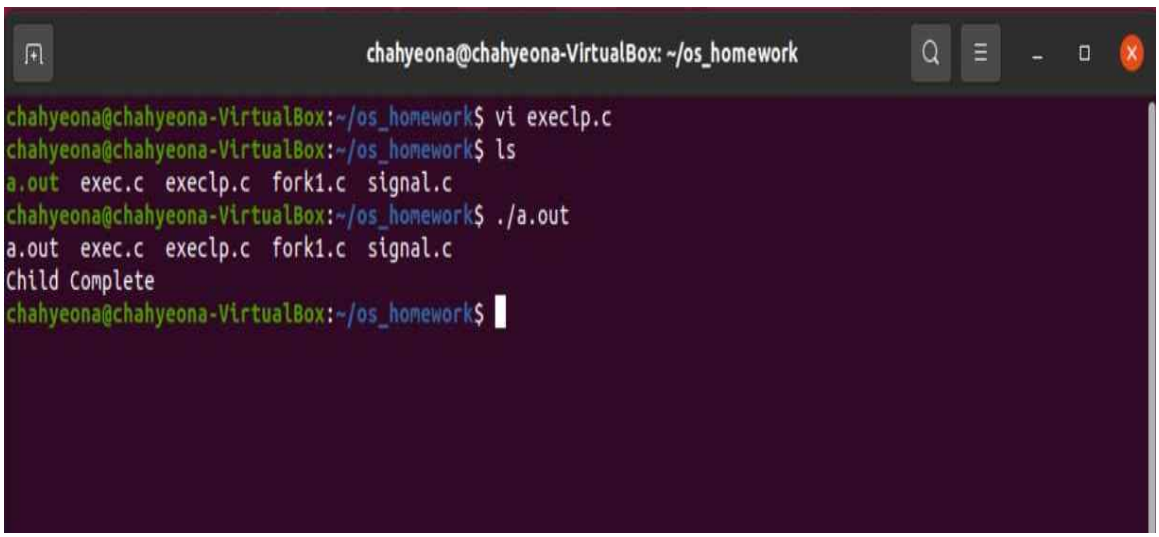


2. 프로세스를 fork한 다음, 새로운 프로그램을 실행하는 C프로그램

코드



실행화면



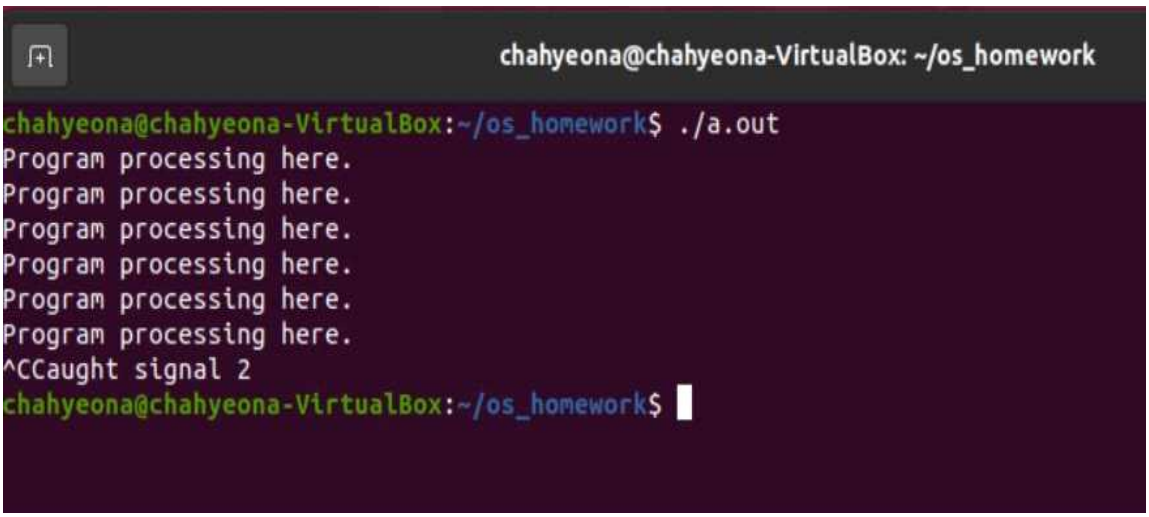
3. 시그널

코드

chahyeona@chahyeona-VirtualBox: ~/os_homework

```
#include<stdlib.h>
#include<stdio.h>
#include<unistd.h>
#include<signal.h>

void signal_handler(int signum)
{
printf("Caught signal %d\n", signum);
exit(signum);
}

int main()
{
signal(SIGINT, signal_handler);

while(1)
{
printf("Program processing here.\n");
sleep(1);
}
return 0;
}
```

실행화면



4. 파이프

코드

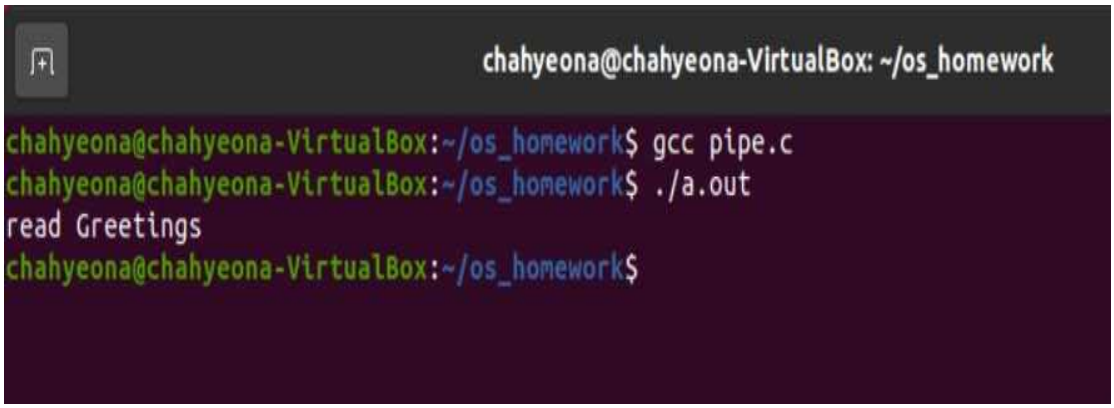
chahyeona@chahyeona-VirtualBox: ~/os_homework

```
#include<stdio.h>
#include<string.h>
#include<unistd.h>

#define BUFFER_SIZE 25
#define READ_END 0
#define WRITE_END 1

int main()
{
char write_msg[BUFFER_SIZE]="Greetings";
char read_msg[BUFFER_SIZE];
int fd[2];
int pid;

if(pipe(fd)==-1)
{
fprintf(stderr, "Pipe Failed\n");
return 1;
}

pid=fork();

if(pid<0)
{
fprintf(stderr, "Fork Failed \n");
return 1;
}
```

chahyeona@chahyeona-VirtualBox: ~/os_homework

```
{
fprintf(stderr, "Pipe Failed\n");
return 1;
}

pid=fork();

if(pid<0)
{
fprintf(stderr, "Fork Failed \n");
return 1;
}
else if(pid==0)
{
close(fd[READ_END]);
write(fd[WRITE_END], write_msg, strlen(write_msg)+1);
close(fd[WRITE_END]);
}
else
{
close(fd[WRITE_END]);
read(fd[READ_END], read_msg, BUFFER_SIZE);
printf("read %s\n", read_msg);
close(fd[READ_END]);
}
return 0;
}
```

실행화면



5. 소켓 : 가시성을 위해 기존 코드에서 출력을 추가하였습니다.

: 컴퓨터 한대로 통신을 하기 위해서 getLocalHost()를 사용하여 제 컴퓨터 IP 주소를 불러왔습니다.

코드 – DateClient 클래스

```
import java.net.*;
import java.io.*;
public class DateClient {
public static void main(String[] args) {
BufferedReader bin2 = null; // 키보드로부터 읽어들이기 위한 입력스트림
PrintWriter out = null; // 서버로 내보내기 위한 출력 스트림
BufferedReader bin=null;
Socket sock=null;
try {
sock = new Socket(InetAddress.getLocalHost(), 6013);
InputStream in = sock.getInputStream();
bin = new BufferedReader(new InputStreamReader(in));
bin2 = new BufferedReader(new InputStreamReader(System.in));
out = new PrintWriter(new BufferedWriter(new
OutputStreamWriter(sock.getOutputStream())));

System.out.print("서버로 보낼 매세지: ");
String data = bin2.readLine(); // 키보드로부터 입력
out.println(data);
out.flush();

String str2 = bin.readLine(); // 서버로부터 되돌아오는 데이터를 읽어들임
System.out.println("서버로부터 되돌아온 메세지: " + str2);
sock.close();
}
catch (IOException ioe) {
System.err.println(ioe);
}
```

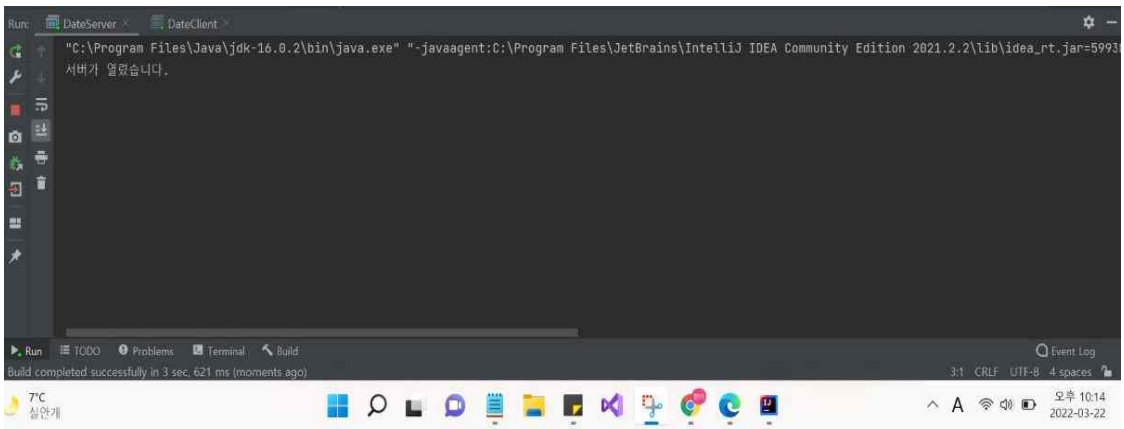
```
}
}
```

코드 – DateServer 클래스

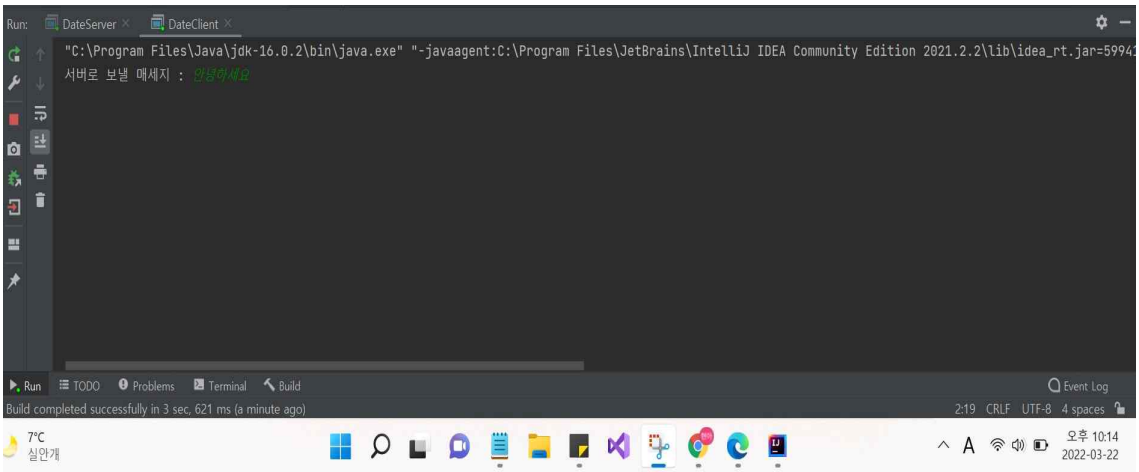
```
import java.net.*;
import java.io.*;
public class DateServer {
public static void main(String[] args) {
ServerSocket sock=null;
Socket socket = null;
BufferedReader in = null;
PrintWriter out = null;
try {
sock = new ServerSocket(6013);

System.out.println("서버가 열렸습니다.");
socket = sock.accept(); // 서버를 생성, Client는 접속 대기

in = new BufferedReader(new InputStreamReader(socket.getInputStream()));

out = new PrintWriter(new BufferedWriter(new
OutputStreamWriter(socket.getOutputStream())));

String str = null;
str = in.readLine();

System.out.println("Client로부터 온 메세지: " + str);

out.write(str);
out.flush();
socket.close();
}
catch (IOException ioe) {
System.err.println(ioe);
System.out.println("해당 포트가 열려있습니다!");
}

}
}
```

실행화면

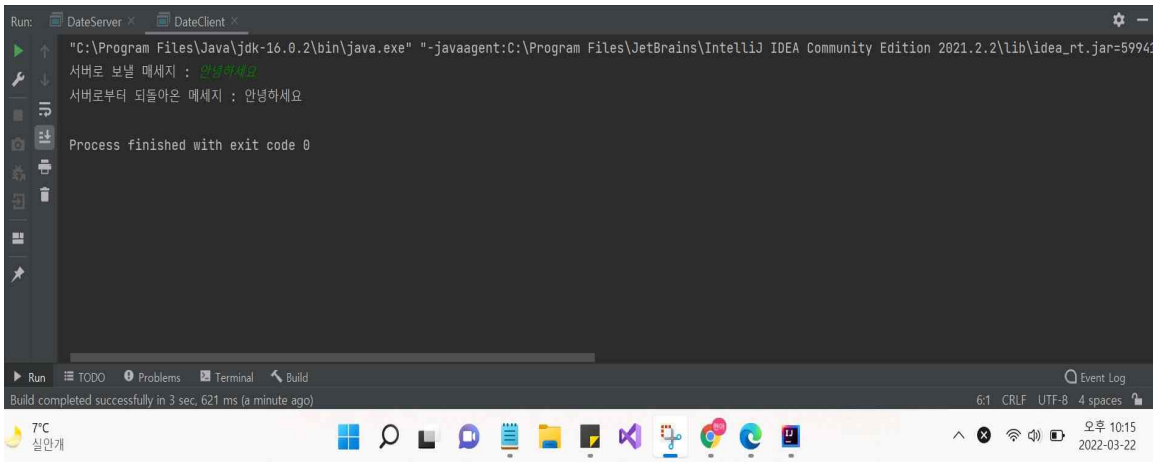
1. 서버 열기



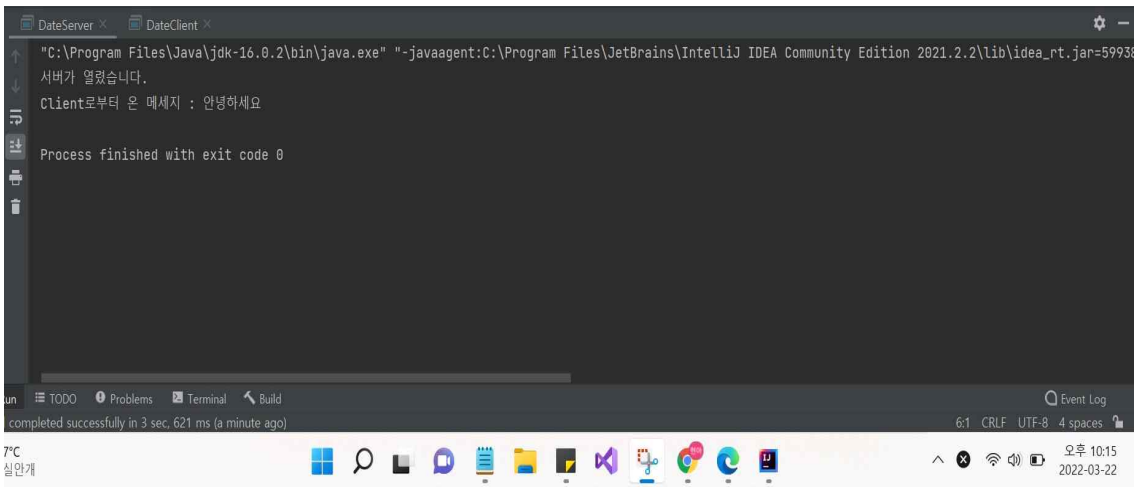
2. DateClient 실행 -> 서버로 보낼 메시지 입력



3. 서버에게 되돌아온 메세지



4. 서버가 클라이언트에게 메시지를 받음



6. JAVA RMI

코드 – RmiClient 클래스

```
import java.rmi.Naming;
public class RmiClient { // RMI Client
public static void main(String args[]) throws Exception {
RmiServerIntf obj = (RmiServerIntf)
Naming.lookup("//localhost/RmiServer");
System.out.println(obj.getMessage());
}
}
```

코드 – RmiServer 클래스

```
import java.rmi.Naming;
import java.rmi.RemoteException;
import java.rmi.server.UnicastRemoteObject;
import java.rmi.registry.*;
public class RmiServer extends UnicastRemoteObject implements RmiServerIntf {
public static final String MESSAGE = "Hello World";
public RmiServer( ) throws RemoteException {
super(0);
}
public String getMessage( ) {
return MESSAGE;
}
public static void main(String args[]) throws Exception {
System.out.println("RMI server started");
try {
LocateRegistry.createRegistry(1099);
System.out.println("java RMI registry created.");
} catch (RemoteException e) {
System.out.println("java RMI registry already exists.");
}

RmiServer obj = new RmiServer();
Naming.rebind("//localhost/RmiServer", obj);
System.out.println("PeerServer bound in registry");
}
}
```

코드 – RmiServerIntf 인터페이스

```
import java.rmi.Remote;
import java.rmi.RemoteException;
public interface RmiServerIntf extends Remote {
public String getMessage() throws RemoteException;
}
```

실행화면