

Computer Programming HW1

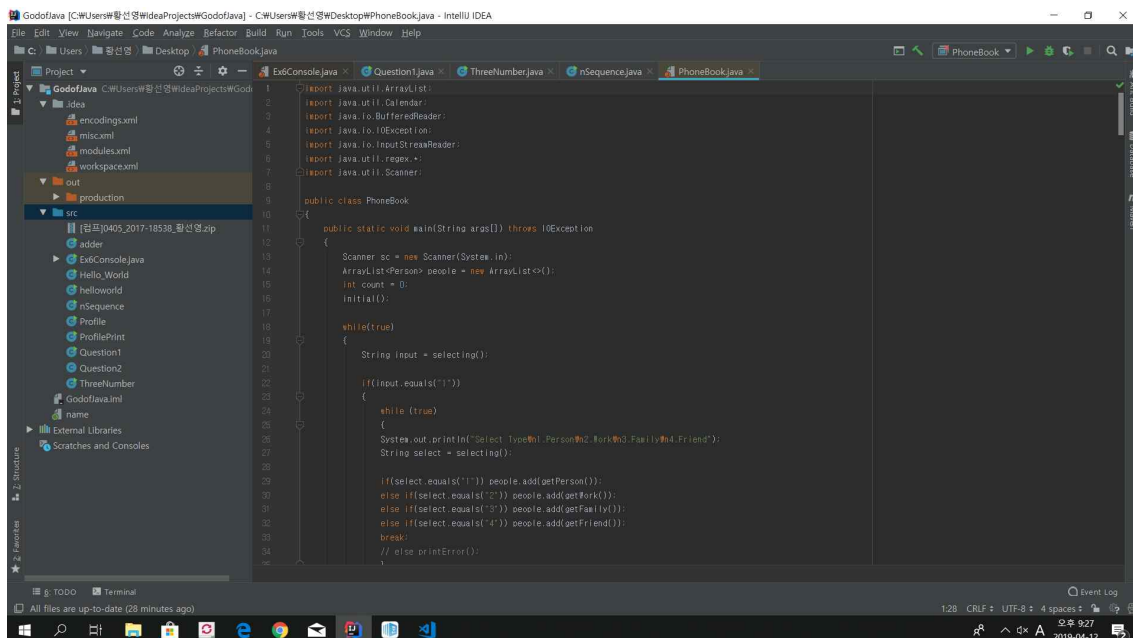
2017-18538 컴퓨터공학부 황선영

- JAVA

- Implementation Environment

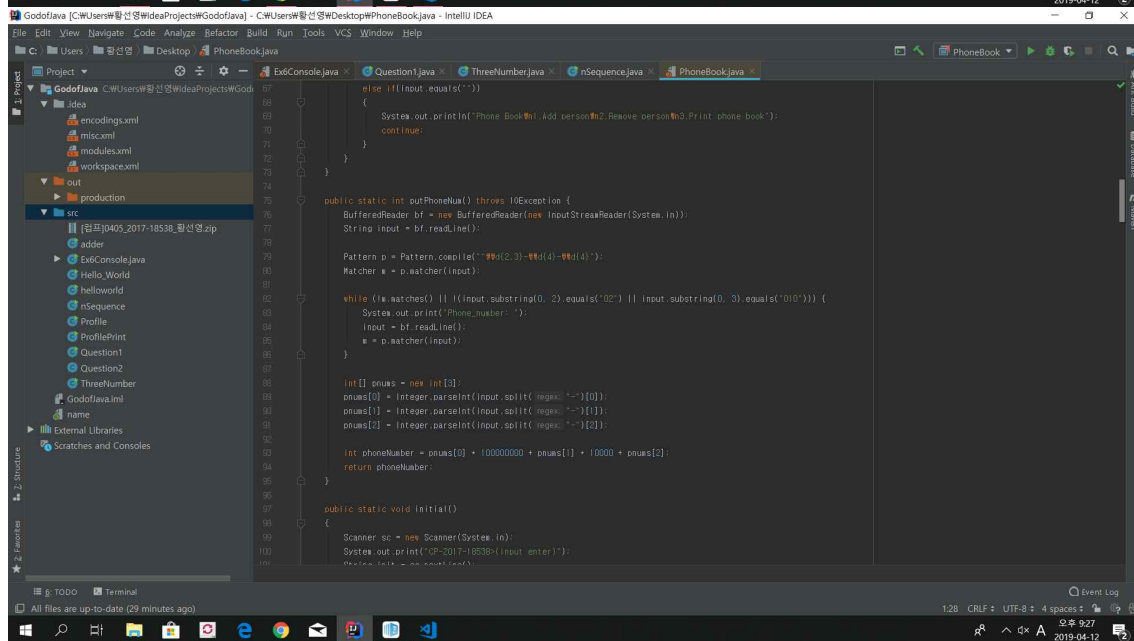
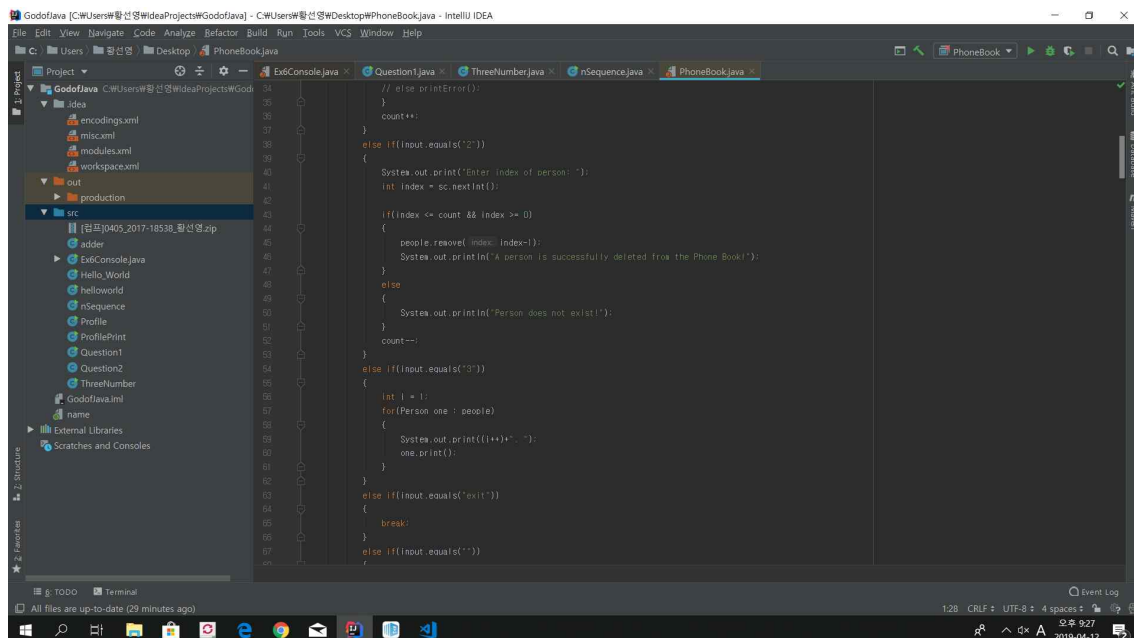
IDE 버전은 IntelliJ IDEA 2018.3.4이고, 컴파일러 버전은 jdk-11.0.2이고, 컴퓨터 운영체제는 window입니다.

- Specific explanation about the code



The screenshot shows the IntelliJ IDEA IDE with the 'PhoneBook.java' file open. The code is as follows:

```
1 import java.util.ArrayList;
2 import java.util.Date;
3 import java.io.BufferedReader;
4 import java.io.IOException;
5 import java.io.InputStreamReader;
6 import java.util.regex.*;
7 import java.util.Scanner;
8
9 public class PhoneBook
10 {
11     public static void main(String args[]) throws IOException
12     {
13         Scanner sc = new Scanner(System.in);
14         ArrayList<Person> people = new ArrayList<>();
15         int count = 0;
16         initial();
17
18         while(true)
19         {
20             String input = selecting();
21
22             if(input.equals("1"))
23             {
24                 while (true)
25                 {
26                     System.out.println("Select Type: 1. Person 2. Work 3. Family 4. Friends");
27                     String select = selecting();
28
29                     if(select.equals("1")) people.add(getPerson());
30                     else if(select.equals("2")) people.add(getWork());
31                     else if(select.equals("3")) people.add(getFamily());
32                     else if(select.equals("4")) people.add(getFriend());
33                     break;
34                 }
35             }
36             // else printError();
37         }
38     }
39 }
```



```
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      Ex6ConsoleJava
      Hello_World
      helloworld
      nSequence
      Profile
      ProfilePrint
      Question1
      Question2
      ThreeNumber
      GodofJava.iml
      name
    External Libraries
    Scratches and Consoles
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System.out.println("CP-2017-18538(input enter)");
String init = sc.nextLine();
if(!init.equals("")) System.out.println("Phone Book\n1. Add person\n2. Remove person\n3. Print phone book");
else if(!init.equals("exit")) System.exit(1);
else {
}

public static String selecting() throws IOException
{
    BufferedReader reader = new BufferedReader(new InputStreamReader(System.in));
    System.out.println("CP-2017-18538");
    String sel = reader.readLine();
    return sel;
}

public static String getName() throws IOException
{
    BufferedReader reader = new BufferedReader(new InputStreamReader(System.in));
    String name = reader.readLine();

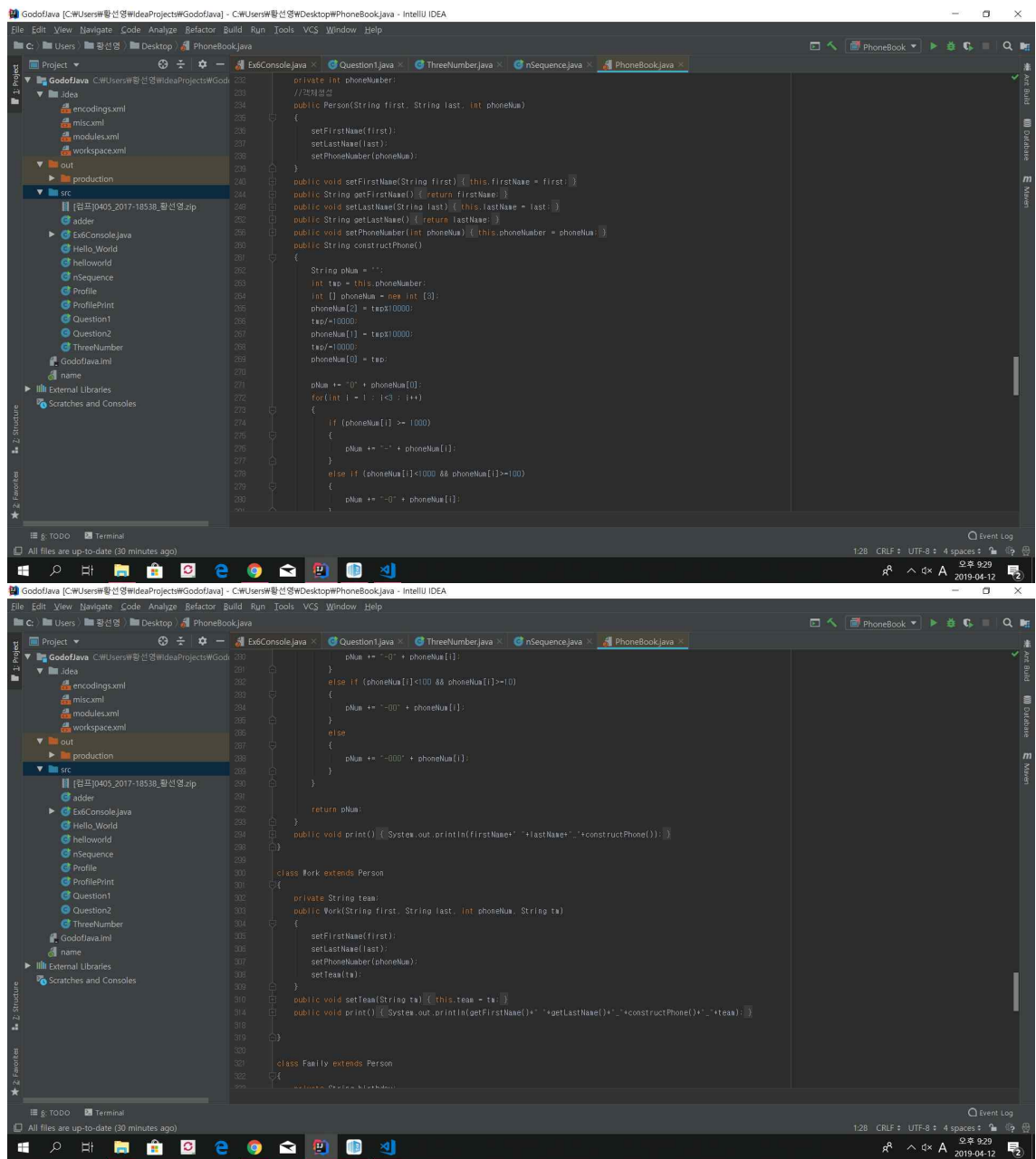
    while(true)
    {
        boolean valName = true;
        for (int i = 0; i < name.length(); i++) {
            if (name.charAt(i) >= '0' && name.charAt(i) <= '9')
            {
                valName = false;
            }
        }

        boolean valType = false;
        name = name.trim();
        if(name.indexOf(" ") != -1)
        {
            continue;
        }
    }
}
```

```
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GodofJava [C:\Users\황선영\workspace\GodofJava] - C:\Users\황선영\Desktop\PhoneBookJava - IntelliJ IDEA
File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
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Project
  GodofJava
    idea
      encodings.xml
      misc.xml
      modules.xml
      workspace.xml
    out
      production
    src
      [김민우0405,2017-18538,황선영.zip]
      adder
      ExoConsoleJava
      Hello_World
      helloworld
      nSequence
      Profile
      ProfilePrint
      Question1
      Question2
      ThreeNumber
      GodofJava.iml
      name
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    Scratches and Consoles
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Question1Java
ThreeNumberJava
nSequenceJava
PhoneBookJava
String first = name.split(regex)[0];
String second = name.split(regex)[1];
System.out.print("Phone number: ");
int pn = outPhoneNum();
System.out.print("Name: ");
String ta = br.readLine();
System.out.println("Successfully added new person.");
Work result = new Work(first, second, pn, ta);
return result;
}
public static Family getFamily() throws IOException
{
    BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
    System.out.print("Name: ");
    String name = getName();
    String first = name.split(regex)[0];
    String second = name.split(regex)[1];
    System.out.print("Phone number: ");
    int pn = outPhoneNum();
    System.out.print("Birthday: ");
    String bd = br.readLine();
    Pattern p = Pattern.compile("^(0|1|2)");
    Matcher m = p.matcher(bd);
    while(m.matches())
    {
        System.out.print("Birthday: ");
        bd = br.readLine();
        m = p.matcher(bd);
    }
    System.out.println("Successfully added new person.");
}
```

```
GodofJava [C:\Users\황선영\workspace\GodofJava] - C:\Users\황선영\Desktop\PhoneBookJava - IntelliJ IDEA
File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
C:\Users\황선영\Desktop\PhoneBookJava
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      encodings.xml
      misc.xml
      modules.xml
      workspace.xml
    out
      production
    src
      [김민우0405,2017-18538,황선영.zip]
      adder
      ExoConsoleJava
      Hello_World
      helloworld
      nSequence
      Profile
      ProfilePrint
      Question1
      Question2
      ThreeNumber
      GodofJava.iml
      name
    External Libraries
    Scratches and Consoles
ExoConsoleJava
Question1Java
ThreeNumberJava
nSequenceJava
PhoneBookJava
System.out.println("Successfully added new person.");
Family result = new Family(first, second, pn, bd);
return result;
}
public static Friend getFriend() throws IOException
{
    BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
    System.out.print("Name: ");
    String name = getName();
    String first = name.split(regex)[0];
    String second = name.split(regex)[1];
    System.out.print("Phone number: ");
    int pn = outPhoneNum();
    System.out.print("Age: ");
    int age = Integer.parseInt(br.readLine());
    while(age<0)
    {
        System.out.print("Age: ");
        age = Integer.parseInt(br.readLine());
    }
    System.out.println("Successfully added new person.");
    Friend result = new Friend(first, second, pn, age);
    return result;
}
class Person
{
    public Person(){}
    private String firstName;
    private String lastName;
    private int phoneNum;
```



```
302 private String birthday;
303 public Family(String first, String last, int phoneNum, String bd)
304 {
305     setFirstName(first);
306     setLastName(last);
307     setPhoneNum(phoneNum);
308     setBirthday(bd);
309 }
310 public void setBirthday(String bd) { this.birthday = bd; }
311 public int dDay()
312 {
313     Calendar cal = Calendar.getInstance();
314     int [] month = {0, 31, 28, 31, 30, 31, 30, 31, 31, 30, 31, 30, 31};
315     int birthmonth = Integer.parseInt(birthday.substring(2,4));
316     int birthdays = Integer.parseInt(birthday.substring(4,5));
317     int caonth = cal.get(Calendar.MONTH) + 1;
318     int cdays = cal.get(Calendar.DAY_OF_MONTH);
319
320     int birthsum = birthdays;
321     int csun = cdays;
322     for(int i = 0; i < birthmonth; i++)
323     {
324         birthsum += month[i];
325     }
326     for(int i = 0; i < caonth; i++)
327     {
328         csun += month[i];
329     }
330
331     int dif = birthsum - csun;
332     if(dif < 0)
```

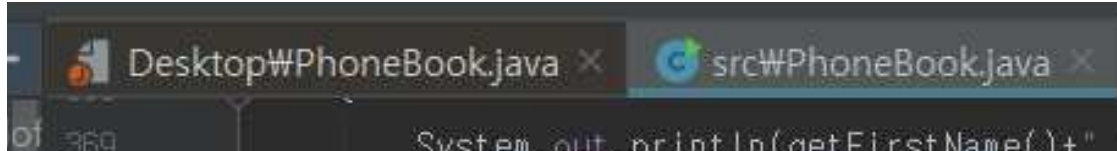
```
333     {
334         return dif+365;
335     }
336     else
337     {
338         return dif;
339     }
340 }
341 public void print()
342 {
343     System.out.println(getFirstName()+" "+getLastName()+" "+constructPhone()+" "+birthday+" "+dDay());
344 }
345
346 class Friend extends Person
347 {
348     private int age;
349     public Friend(String first, String last, int phoneNum, int Age)
350     {
351         setFirstName(first);
352         setLastName(last);
353         setPhoneNum(phoneNum);
354         setAge(Age);
355     }
356     public void setAge(int Age) { this.age = Age; }
357     public void print() { System.out.println(getFirstName()+" "+getLastName()+" "+constructPhone()+" "+age); }
358 }
359 }
```

먼저 Person class와 그것의 child class인 Work, Friend, Family class를 만들었다. 그리고 각 class에 필요한 변수와 method를 선언했다. 디데이계산을 위해 Calendar 라이브러리를 사용했다. main method에서는 전체 프로그램의 전체적인 알고리즘을 구현했고 구체적인 작동은 static method를 이용하여 구현하였다. static method는 다음과 같다.

- 1) putPhoneNum method: 형식에 맞는 번호를 받는 method이다.
- 2) initial method: 초기상태를 print하는 method이다.
- 3) selecting method: 어떤 menu를 고를지 select하는 method이다.
- 4) getName method: 형식에 맞는 이름을 받는 method이다.
- 5) getPerson, getWork, getFriend, getFamily method: 각 type에 맞는 arraylist

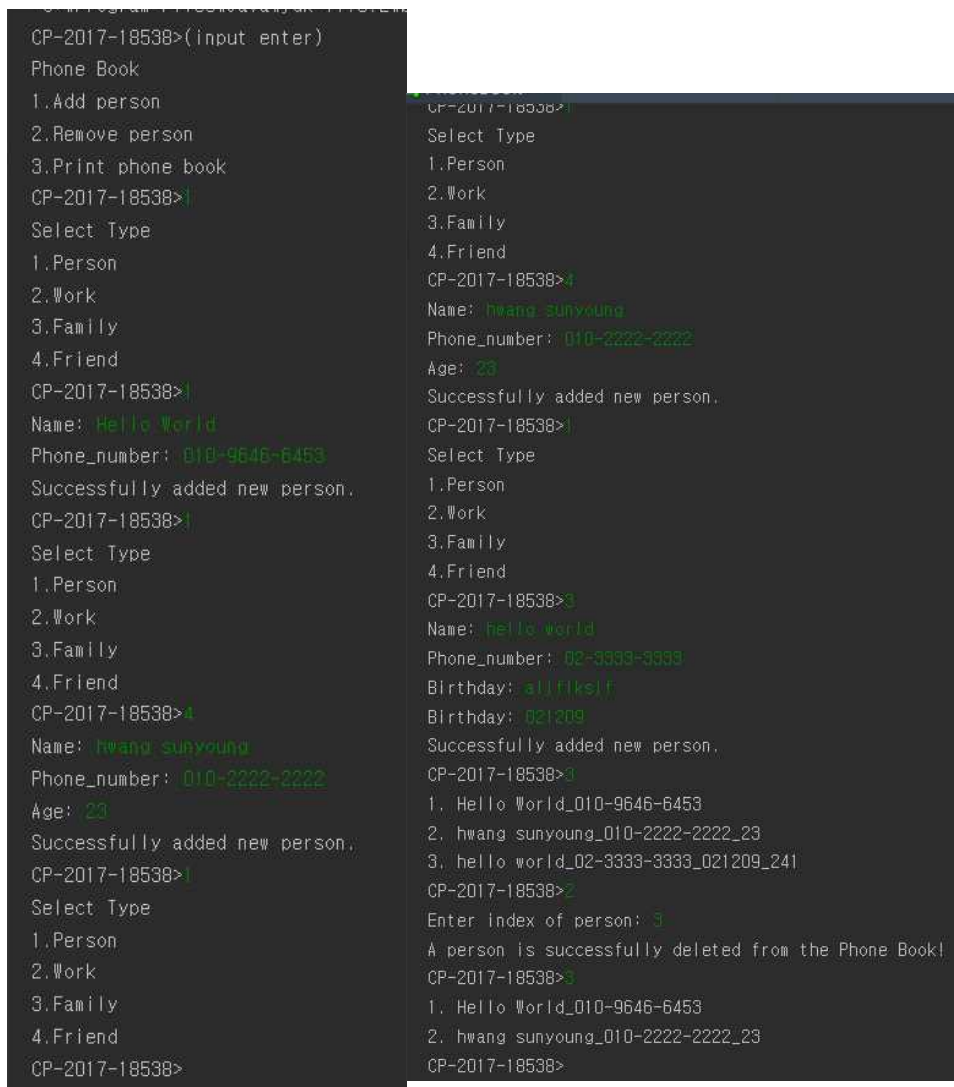
를 입력할 수 있게 해주는 method이다.

-Troubleshooting points while implementing code



자바 파일을 데스크탑에 저장한 후 실행하면 왼쪽과 같은 파일로 실행되는데, 그러면 에러가 나서 실행이 안 된다. 그래서 다시 오른쪽처럼 class로 생성한 다음 실행해야 한다. 왼쪽과 같은 아이콘일 때 왜 실행이 안 되는지는 이유를 찾지 못하였다.

-Screenshot of the program working



- C++

- Implementation Environment

IDE 버전은 visual studio이고, 컴파일러 버전은 gcc version 6.3.0이고, 컴퓨터 운영체제는 window입니다.

- Specific explanation about the code

먼저 Person class와 그것의 child class인 Work, Friend, Family class를 만들었다. 그리고 각 class에 필요한 변수와 함수를 선언했다. 클래스를 다른 파일로 구현하여 메인함수가 있는 파일에 헤더파일 선언을 했다. main 함수에서는 전체 프로그램의 전체적인 알고리즘을 구현했고 구체적인 작동은 함수를 이용하여 구현하였다. 구현한 함수는 다음과 같다.

- 1) putPhoneNum: 형식에 맞는 번호를 받는 함수이다.
- 2) initial: 초기상태를 print하는 함수이다.
- 3) selecting: 어떤 menu를 고를지 select하는 함수이다.
- 4) makeFirst: string으로 받은 full name을 쪼개 first name을 받는 함수이다.
- 5) makeLast: string으로 받은 full name을 쪼개 Last name을 받는 함수이다.
- 6) getValidBirth: 형식에 맞는 생년월일을 받는 함수이다.
- 7) getValidAge: 형식에 맞는 나이를 받는 함수이다.

- Troubleshooting points while implementing code

두 가지 문제가 있다. 이름 입력받을 때 name이 두 번 출력된다. 그리고 print할 때 다 person의 형식으로 뜬다. 두 가지 오류의 원인을 잡아내지 못했다....

- Screenshot of the program working

```
CP-2017-18538>(input enter)
Phone Book
1.Add person
2.Remove person
3.Print phone book
CP-2017-18538>1
Select Type
1.Person
2.Work
3.Family
4.Friend
CP-2017-18538>2
Name: Name: afdaf dafas
Phone number: 010-21341-1414
Phone number: 010-2222-2222
Team: aglkj
Successfully added new person.
CP-2017-18538>3
1. afdaf dafas 010-2222-2222
CP-2017-18538>1
Select Type
1.Person
2.Work
3.Family
4.Friend
CP-2017-18538>3
Name: Name: aff asfa
Phone number: 02-0000-0000
Birthday: zgag
Birthday: 900912
Successfully added new person.
CP-2017-18538>3
1. afdaf dafas 010-2222-2222
2. aff asfa 02-0000-0000
CP-2017-18538>
```