데이터융합**SW**과
김규석 교수

JAVA

기본 프로그래밍 02

Objective

Condition
▸ if … else

▸ switch

Loop
▸ for

▸ while

Condition(Cont'd)

if ... else

‣ A "if statement" is used to specify a block of code

```java
7     public static void main(String[] args) {
8         Scanner scanner = new Scanner(System.in);
9         int i, j;
10        i = 3;
11        j = 5;
12
13        if (i > j) {
14            System.out.println("i is greater than j");
15        } else {
16            System.out.println("j is greater than i or j and i are the same");
17        }
18    }
19 }
```
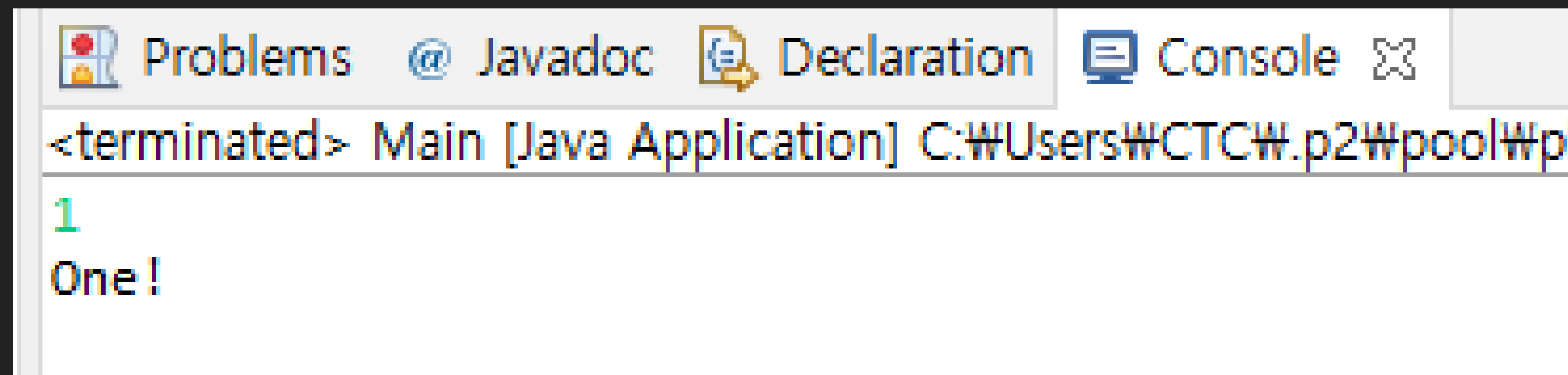
Problems   @ Javadoc   Declaration   Console ⊠

<terminated> Main [Java Application] C:\Users\CTC\.p2\pool\pl

j is greater than i or j and i are the same

P1

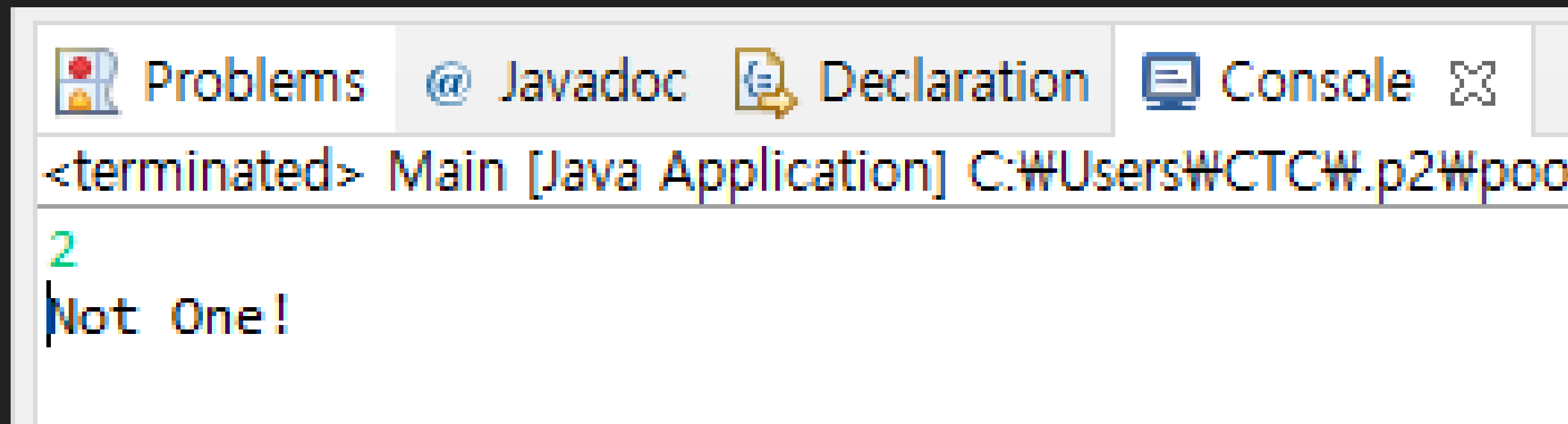## Compose a program that distinguishes the input number

‣ User inputs a number

‣ Print "One!" if the input number is 1,
  Otherwise, print "Not One!"

Condition(Cont'd)

if ... else if ... else

‣ You can use "if statements" to specify a block of code

```java
   public static void main(String[] args) {
       Scanner scanner = new Scanner(System.in);
       int n;
       n = scanner.nextInt();
       if (n == 1) {
           System.out.println("One");
       } else if (n == 2) {
           System.out.println("Two");
       } else if (n == 3) {
           System.out.println("Three");
       } else {
           System.out.println("Except 1, 2, 3");
       }
   }
```

Problems @ Javadoc Declaration Console ⊠

\<terminated\> Main [Java Application] C:\Users\CTC\.p2\p...

2
Two

Problems @ Javadoc Declaration Console ⊠
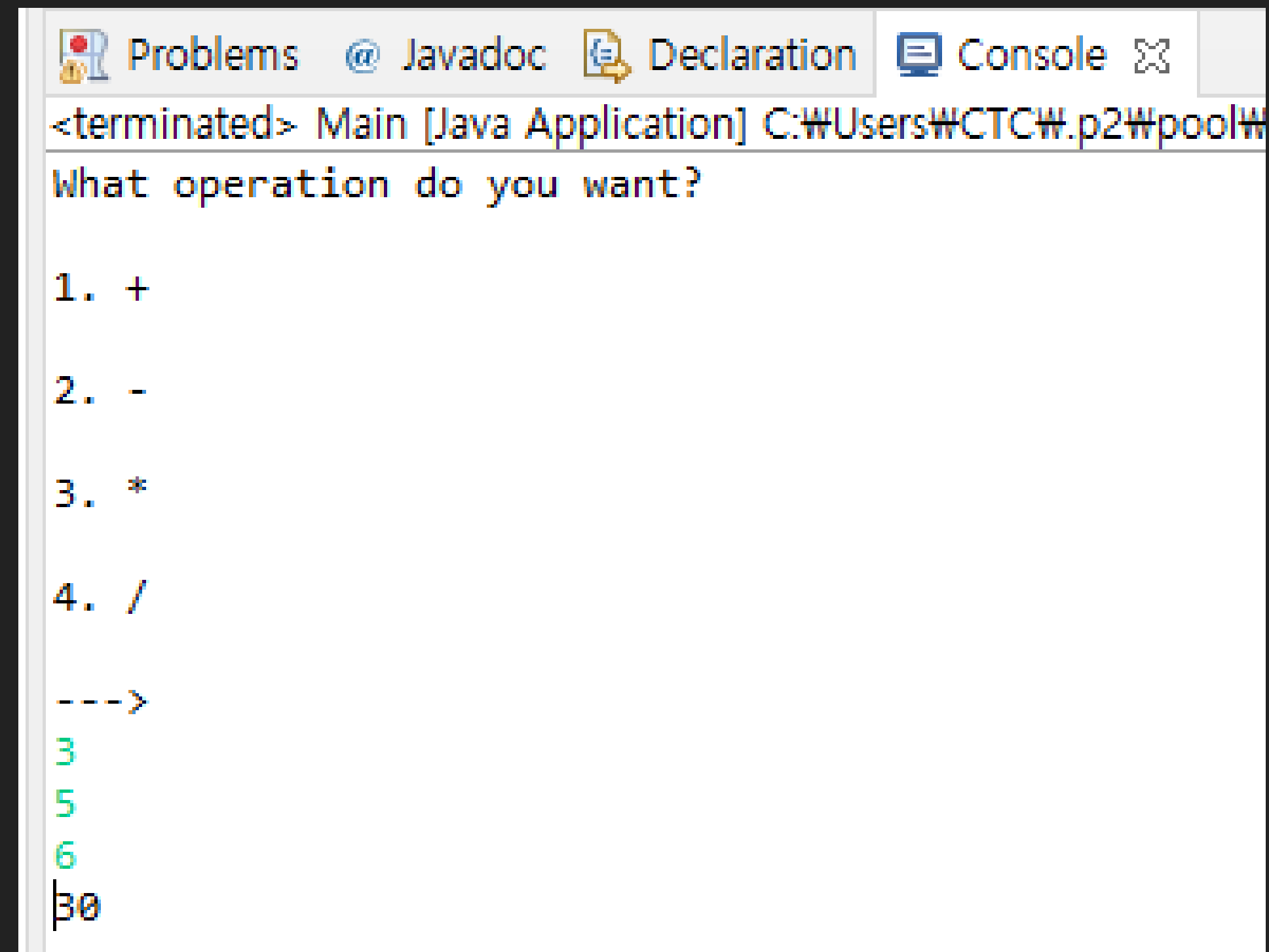
\<terminated\> Main [Java Application] C:\Users\CTC\.p2\pool\

33
Except 1, 2, 3

P2

Calculator

▸ User inputs an operation number(1 : +, 2 : -, 3 : *, 4 : /)

▸ User inputs the two numbers

▸ Print the calculated result

P3

Multiplication Table

‣ User inputs a number N from 2 to 9

‣ Print the N times table

```
Problems  @ Javadoc  Declaration  Console ✕
<terminated> Main [Java Application] C:\Users\CTC\.p2\pool\
What number do you want?
7
7 X 2 = 14
7 X 3 = 21
7 X 4 = 28
7 X 5 = 35
7 X 6 = 42
7 X 7 = 49
7 X 8 = 56
7 X 9 = 63
```
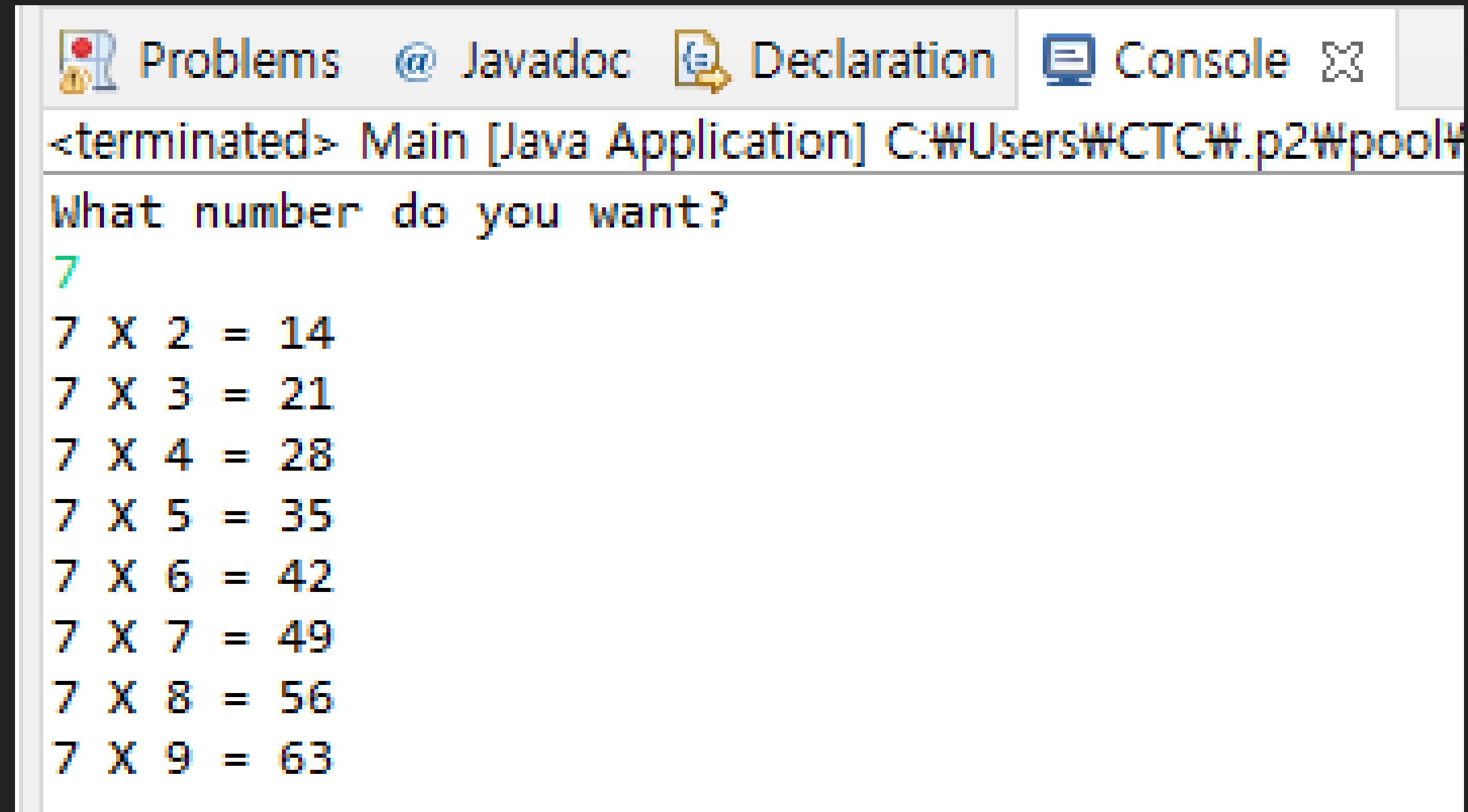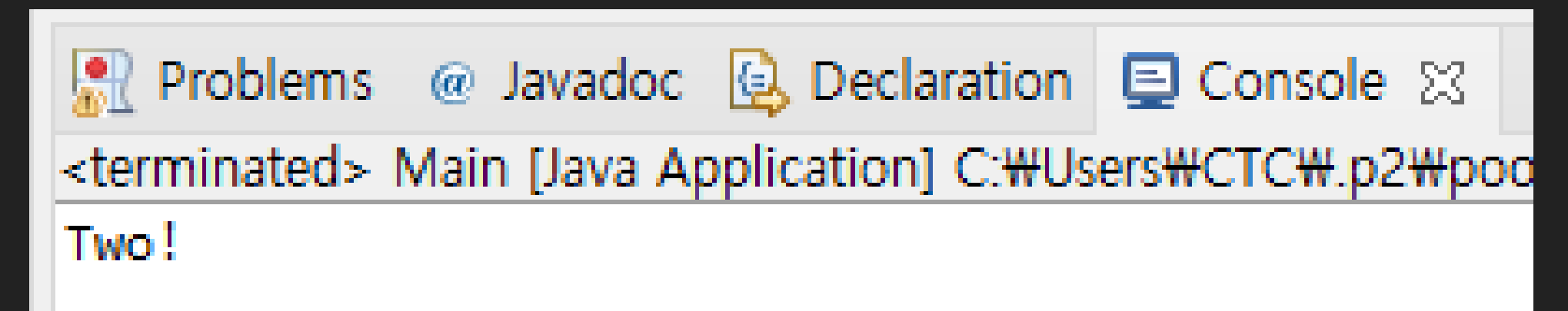
Condition

switch

▸ A "switch" statement is used to select one of the code blocks to be executed

▸ The "default" keyword is option and executed when there's no matched case

```java
7  public static void main(String[] args) {
8      Scanner scanner = new Scanner(System.in);
9      int n;
10     n = 2;
11     switch (n) {
12         case 1:
13             System.out.println("One!");
14             break;
15         case 2:
16             System.out.println("Two!");
17             break;
18         default:
19             System.out.println("Except 1, 2");
20             break;
21     }
22  }
```
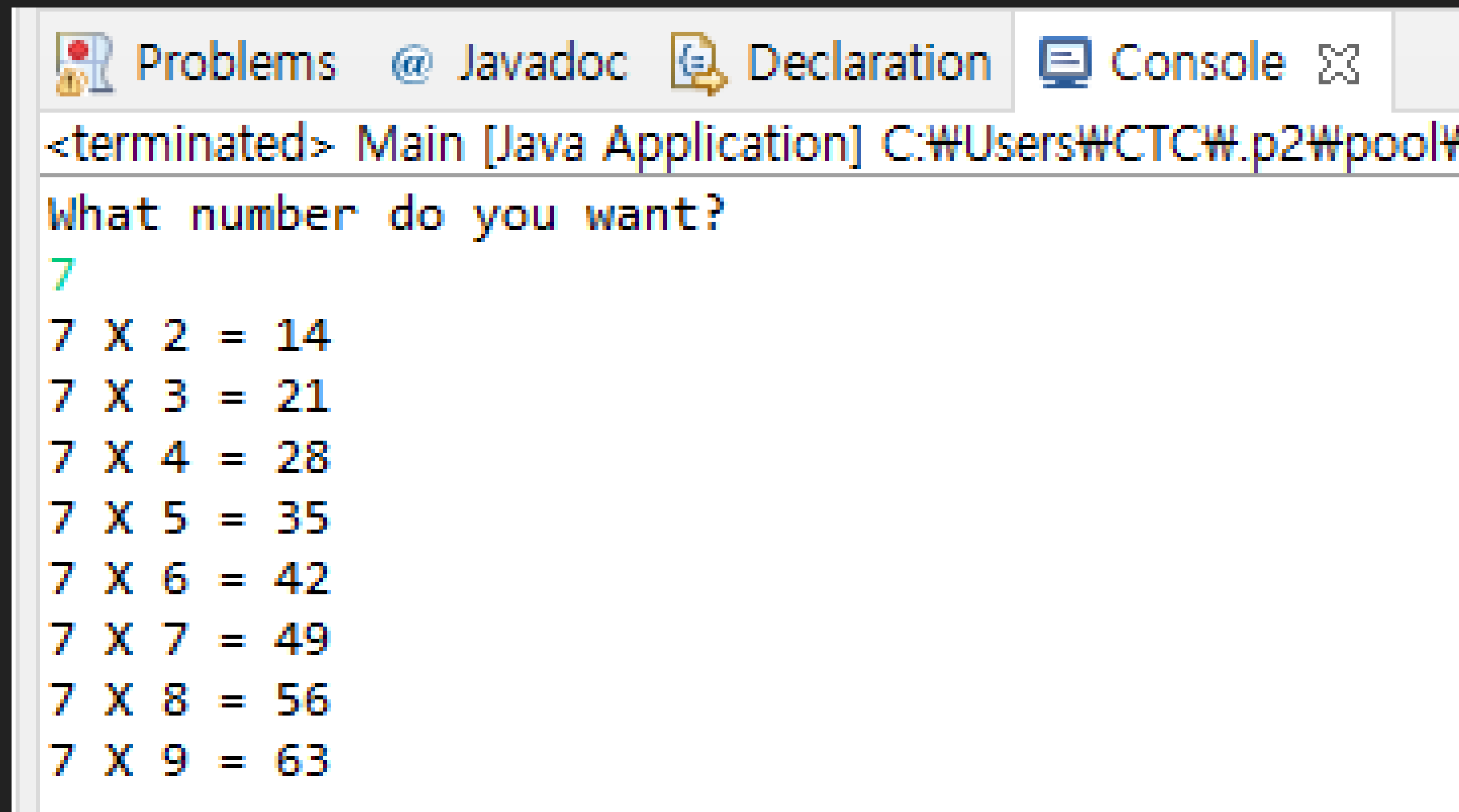
Problems @ Javadoc Declaration Console ⊠

\<terminated> Main [Java Application] C:\Users\CTC\.p2\poo

Two!

P4

Multiplication Table

▸ User inputs a number N from 2 to 9

▸ Print the N times table

▸ In order to compose a condition statement, use the "switch" statement

```
Problems  @ Javadoc  Declaration  Console
<terminated> Main [Java Application] C:\Users\CTC\.p2\pool\
What number do you want?
7
7 X 2 = 14
7 X 3 = 21
7 X 4 = 28
7 X 5 = 35
7 X 6 = 42
7 X 7 = 49
7 X 8 = 56
7 X 9 = 63
```

Condition+

String equals()

▸ Compare the two strings to find out if they are equal

```java
7⊖    public static void main(String[] args) {
8         Scanner scanner = new Scanner(System.in);
9         String text = "hello?";
10        if (text.equals("hello") == true) {
11            System.out.println("It's hello");
12        } else {
13            System.out.println("It's not hello");
14        }
15
16    }
```

Problems @ Javadoc Declaration Console ⌗

<terminated> Main [Java Application] C:\Users\CTC\.p2\po

```
It's not hello
```

Q1* : Why aren't they equal to each other?

Condition+

String contains()

▸ Check if a string contains the specific set of characters

```java
7⊖    public static void main(String[] args) {
8         Scanner scanner = new Scanner(System.in);
9         String text = "hello?";
10        if (text.contains("hello") == true) {
11            System.out.println("It's hello");
12        } else {
13            System.out.println("It's not hello");
14        }
15
16    }
```

🔲 Problems   @ Javadoc   🔁 Declaration   🖥 Console ✖

\<terminated\> Main [Java Application] C:\Users\CTC\.p2\po

```
It's hello
```

P5

Word Containing Program

▸ User inputs a sentence

▸ Print if the word, "car" is included or not

```java
7    public static void main(String[] args) {
8        Scanner scanner = new Scanner(System.in);
9        String text;
10       text = scanner.nextLine();
11
12       if (text.contains("car") == true) {
13           System.out.println("car is included in the input string.");
14       } else {
15           System.out.println("car is not included in the input string.");
16       }
17
18       System.out.println(text);
19
20   }
```

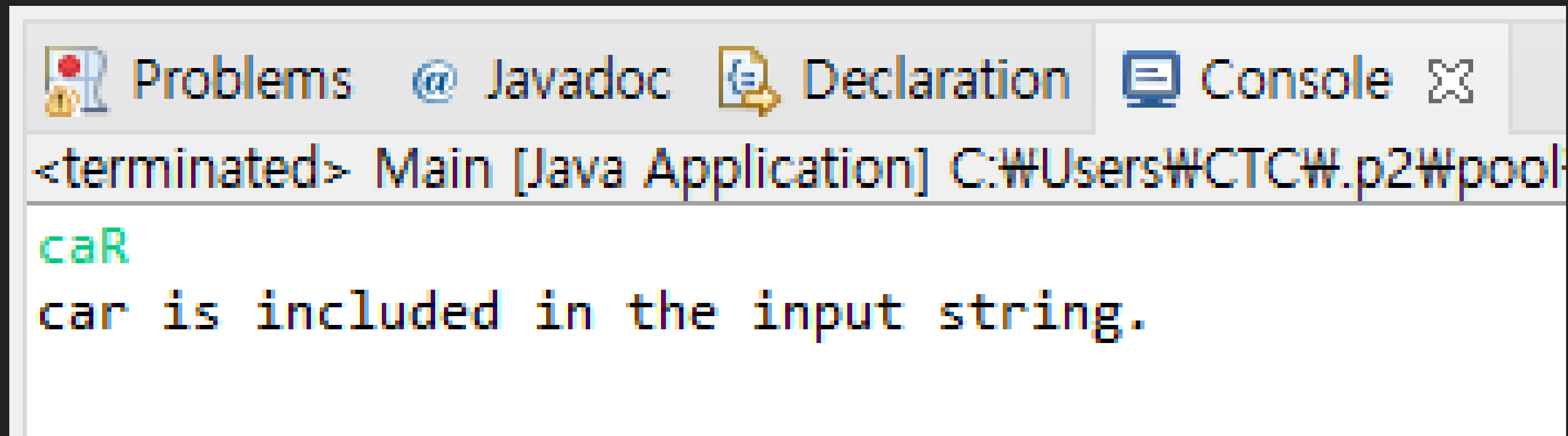Problems @ Javadoc Declaration Console

<terminated> Main [Java Application] C:₩Users₩CTC₩.p2₩pool

my car is very good
car is included in the input string.
my car is very good

Word Containing Program II

‣ User inputs a sentence

‣ Print if the word, "car" is included or not, regardless of upper case or lower case


```
Problems  @ Javadoc  Declaration  Console
<terminated> Main [Java Application] C:\Users\CTC\.p2\pool
caR
car is included in the input string.
```

Loop(Cont'd)

for

▸ A "for" loop is used to execute a set of code repeatedly

```java
 7    public static void main(String[] args) {
 8        int i = 0;
 9        for (i = 2; i < 10; i++) {
10            System.out.println(3 + "X" + i + " = " + (3 * i));
11        }
12    }
```
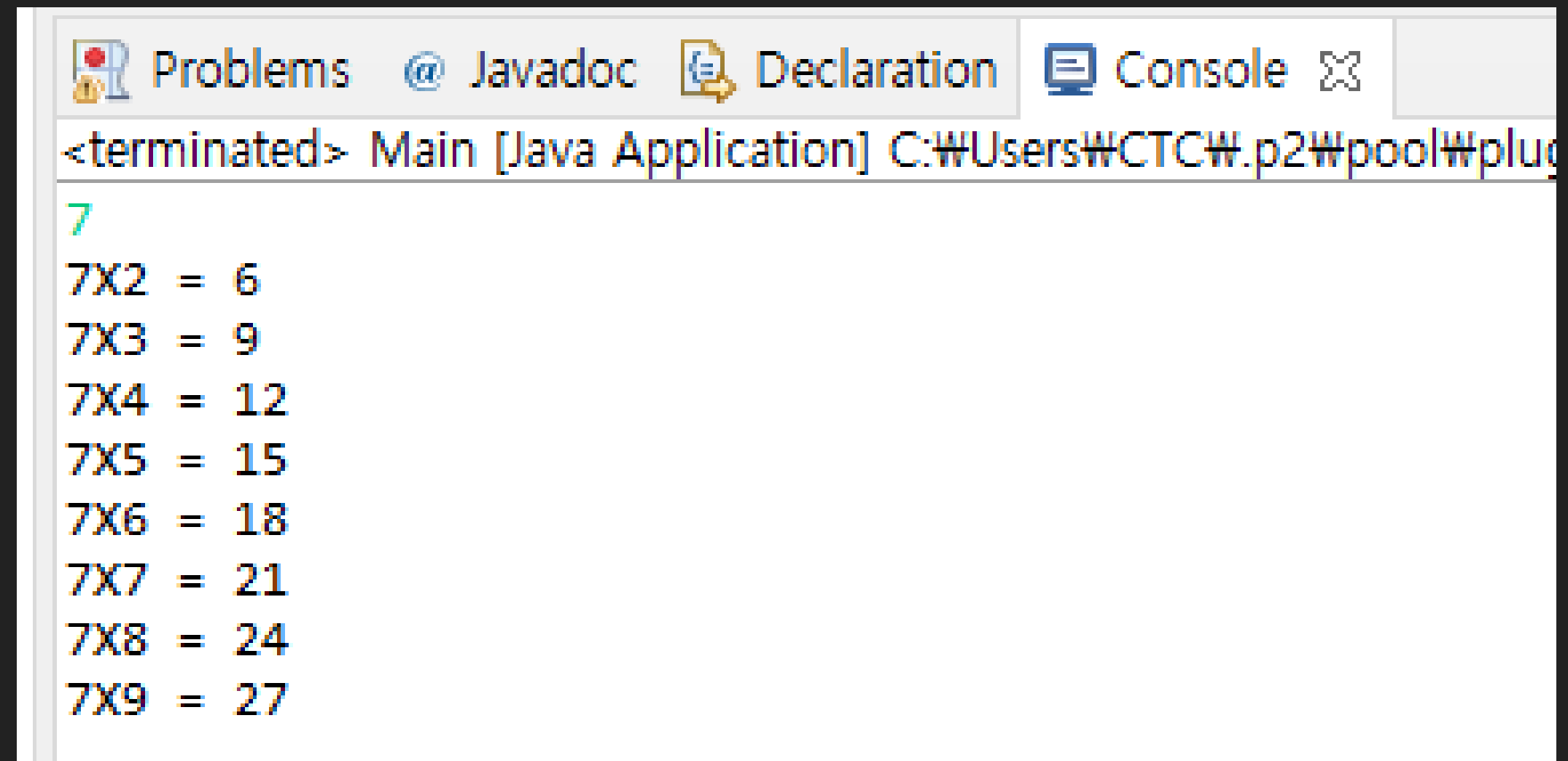
```
🔲 Problems  @ Javadoc  🔍 Declaration  🖥 Console ⊠
<terminated> Main [Java Application] C:\Users\CTC\.p2\po
3X2 = 6
3X3 = 9
3X4 = 12
3X5 = 15
3X6 = 18
3X7 = 21
3X8 = 24
3X9 = 27
```

P7

Multiplication Table II

‣ User inputs a number N from 2 to 9

‣ Print the N times table
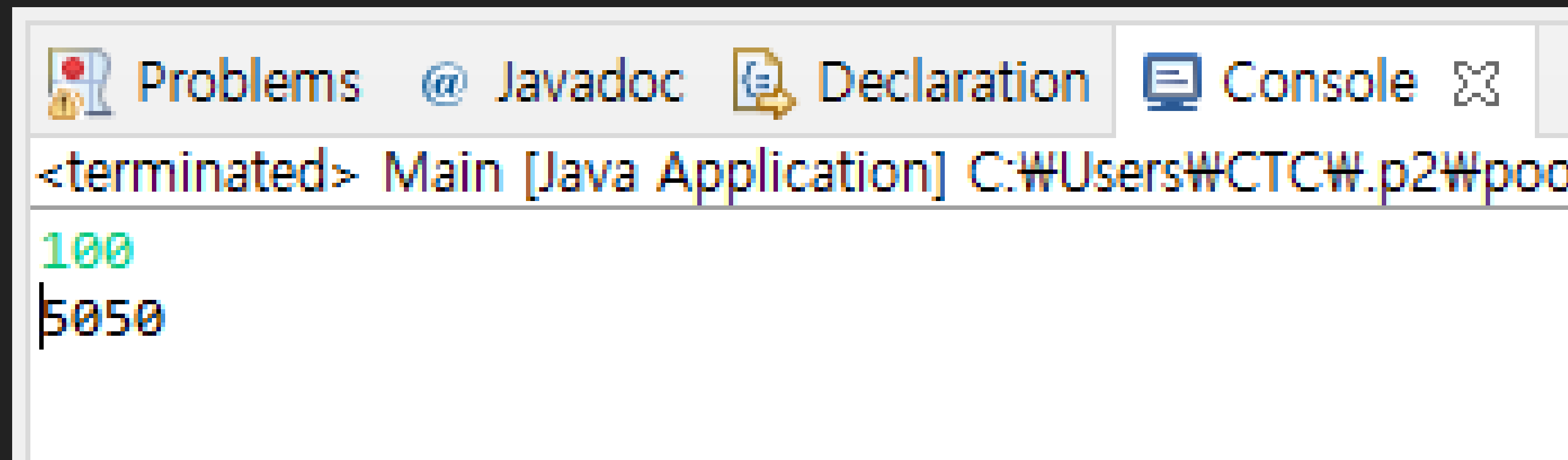
‣ Use an "if" or "switch" statement

‣ Use a "for" loop


```
Problems   @ Javadoc   Declaration   Console ✕
<terminated> Main [Java Application] C:₩Users₩CTC₩.p2₩pool₩plug
7
7X2 = 6
7X3 = 9
7X4 = 12
7X5 = 15
7X6 = 18
7X7 = 21
7X8 = 24
7X9 = 27
```

P8

Arithmetic Progression

‣ User inputs a number N
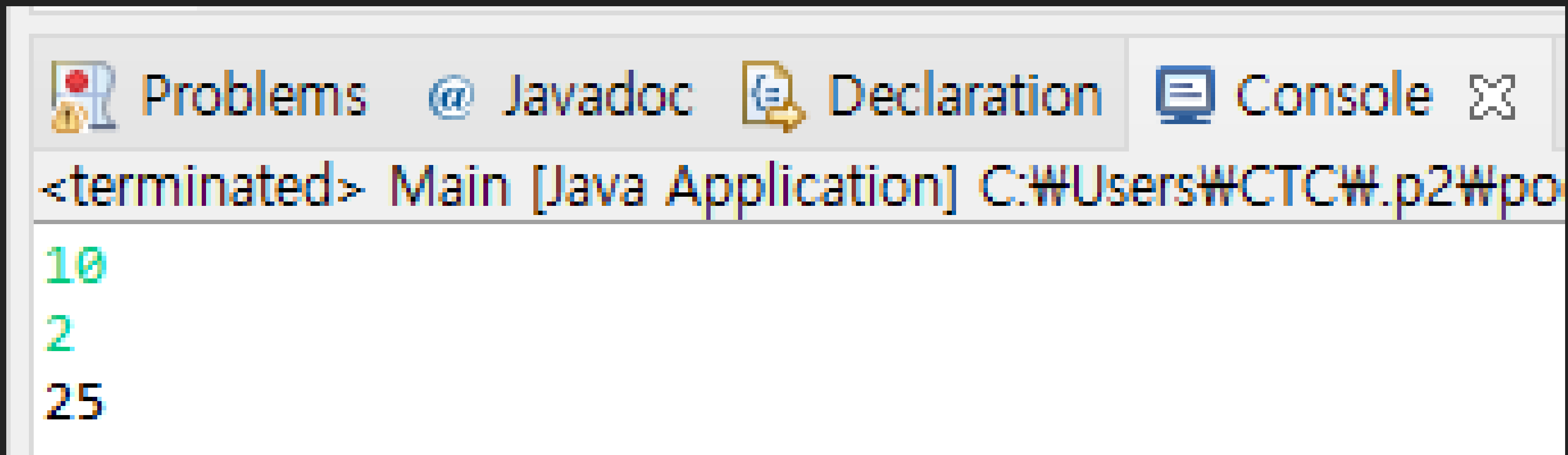
‣ The program adds 1 to N

‣ Print the summation

Problems @ Javadoc Declaration Console ✕

<terminated> Main [Java Application] C:₩Users₩CTC₩.p2₩pool

```
100
5050
```

P9

Arithmetic Progression II

▸ User inputs the two number N and M

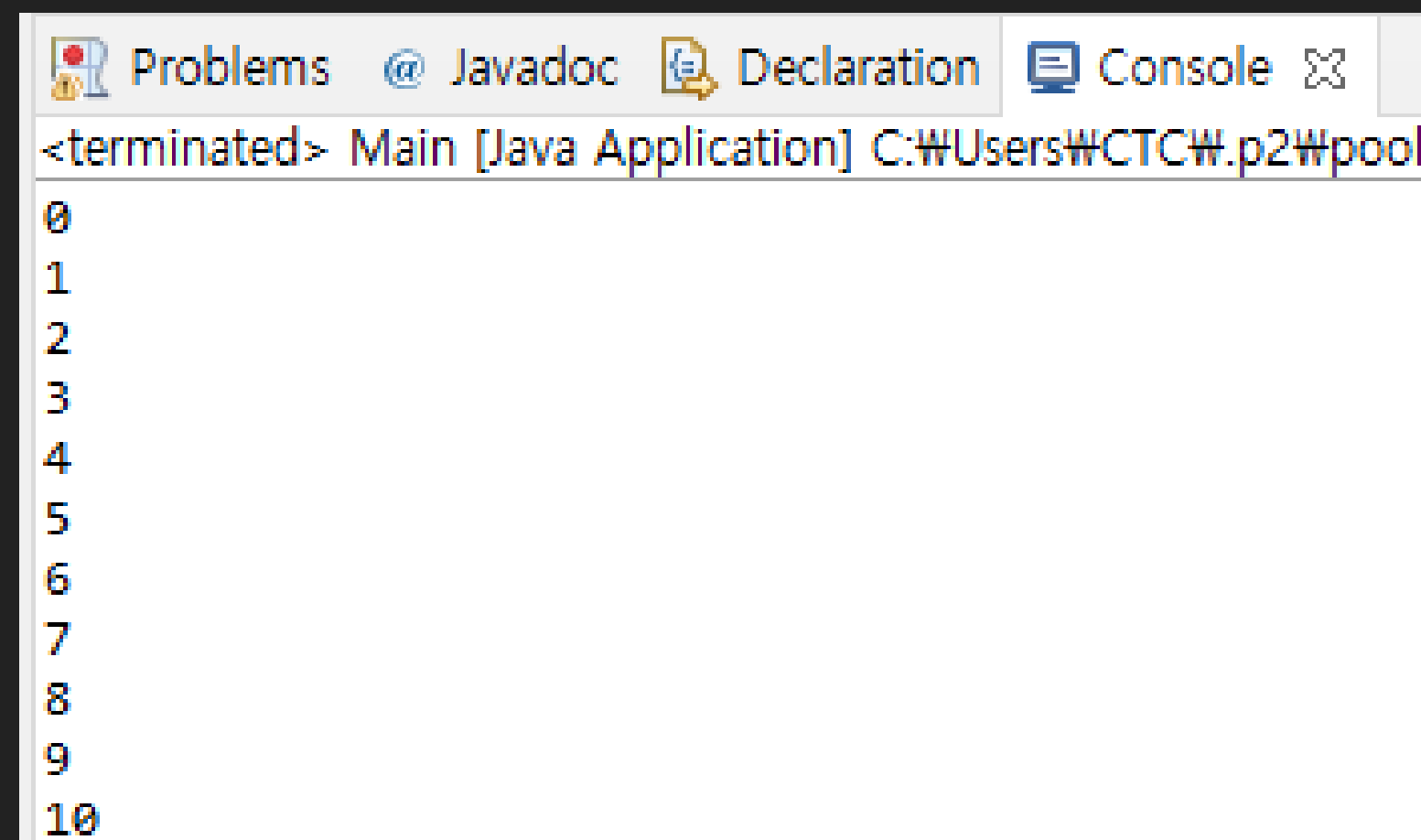▸ The program adds 1 to N by M(ex : 10, 2, 1 + 3 + 5 + 7 + 9 = 25)

▸ Print the summation

Problems @ Javadoc Declaration Console ✕

\<terminated\> Main [Java Application] C:\Users\CTC\.p2\po

```
10
2
25
```

Loop(Cont'd)

while

‣ An "while" loop is used to execute a set of code repeatedly while satisfying the conditions

```java
  7⊖    public static void main(String[] args) {
  8          Scanner scanner = new Scanner(System.in);
  9          int i = 0;
 10          while (i <= 10) {
 11              System.out.println(i);
 12              i++;
 13          }
 14      }
```

```
🔲 Problems  @ Javadoc  🔍 Declaration  🔲 Console ⌗
<terminated> Main [Java Application] C:₩Users₩CTC₩.p2₩pool
0
1
2
3
4
5
6
7
8
9
10
```

P9 : Check the result with "while(true)" statement

Loop(Cont'd)

while

▸ An "while" loop is used to execute a set of code repeatedly while satisfying the conditions

```java
 7    public static void main(String[] args) {
 8        Scanner scanner = new Scanner(System.in);
 9        int i = 0;
10        while (true) {
11            System.out.println(i);
12            i++;
13            if (i > 3) {
14                break;
15            }
16        }
17    }
```

Problems @ Javadoc Declaration Console ⌧

\<terminated> Main [Java Application] C:₩Users₩CTC₩.p2₩po

```
0
1
2
3
```

Loop

do ... while

‣ A "do while" loop is used to execute a part of code before "while" loop

```java
public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);
    int i = 0;
    do {
        System.out.println(i);
        i++;
    } while (i <= 0);
}
```

Problems   @ Javadoc   Declaration   Console

\<terminated\> Main [Java Application] C:\Users\CTC\.p2\p

0

Multiplication Table III

▸ Use an "if" statement

▸ Use a double "for" loop

▸ Print 2 to 9 times table

Multiplication Table IV

▸ Use an "switch" statement

▸ Use a double "while" loop

▸ Print 2 to 9 times table

Draw a Right Triangle

▸ User inputs a number, N

▸ Print an N height of the right triangle with "*"

▸ Use a "for" loop

5

*
**
***
****
*****

P13

Draw an Equilateral Triangle

▸ User inputs a number, N

▸ Print an N height of the equilateral triangle with "*"

▸ Use a "for" loop

5

```
    *
   ***
  *****
 *******
*********
```

P14

Draw an Inverted Equilateral Triangle

▸ User inputs a number, N

▸ Print an N height of the inverted equilateral triangle with "*"

▸ Use a "for" or "while" loop

5

```
*********
 *******
  *****
   ***
    *
```

P15

Find the Factors of N

▸ User inputs a number, N

▸ Print the factors of N

10

1
2
5

P16

Find the LCM(Least Common Multiple)

‣ User inputs the two numbers, N and M

‣ Print the LCM

5
7

35

P17

Find the GCD(Greatest Common Divisor)

▸ User inputs the two numbers, N and M

▸ Print the GCD

24
18

6

P18

Find the Prime Numbers

‣ User inputs a numbers, N

‣ Print the prime number to N

11

2
3
5
7
11