Review While-Structure and If-Structure

College of Arts, Media and Technology
Chiang Mai University

Example

- Write a program to receive a non-negative integer from user and display the Fibonacci number from 1 to the number.

Example

- Write a program to receive a non-negative integer from user and display the Fibonacci number as much as the input number.

Example #1

- Write a program to receive a number and check if the number is odd number.

Example #2

- Write a program to receive 10 numbers from user and display only the number of even number.

Example #3

- Write a program to receive a number and check if the number is prime number or not.

Example #4

- Write a program to receive a range of integer number and display only the prime number.

Example #5

- Write a program to receive 3 positive integer numbers and display the largest number.

Example #6

- Write a program to receive 3 positive integer numbers and sort the number in
  - Descending order
  - Ascending order
- Array is not allowed.
- What if I change the number to 4 numbers!!!!!

Example #7

- Write a program to receive a number and reverse the number.

- Input : 1234
- Output : 4321

Example #7

- Write a program to receive a integer number and check if the number is palindrome or not.
- For simplicity, the number must be 4 digits.
- 1221
- 2334

For-Structure

Fixed Iterative

- Fixed iteration
  - Do something with the specific amount of time
  - Merge the counter into the statement
    - Not explicitly stay in the while statements

The for Statement

- The syntax of the for statement is:
- `for (initialization; loop condition; update statement(s))`

```
{
        statement-1:
        statement-2;
                …
                statement-n:
}
```

- The braces may be omitted if the statement block consists of a *single* statement.

The for Statement

- The semantics of the for statement are:

1. The *initialization statement* executes.
2. The *loop condition* (a Boolean expression) is evaluated.

    2.1 If the loop condition is *true*, then:

        2.1.1 statement-1, statement-2,…, statement-n execute,

        2.2.2 The update-statement(s) executes,

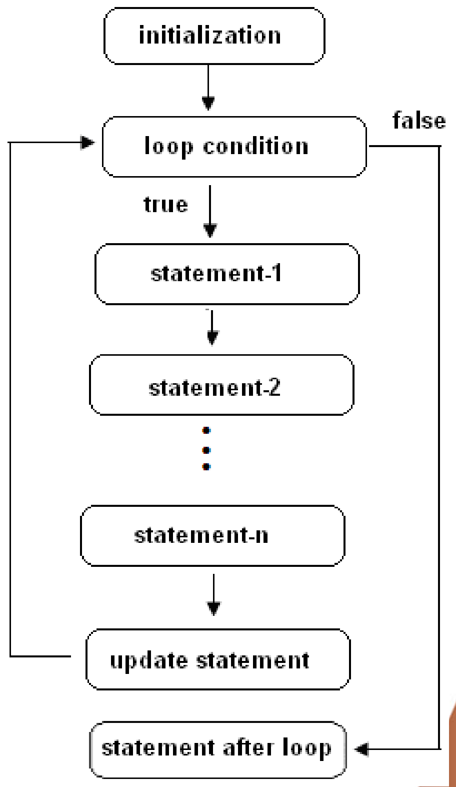
        2.2.3 Go to step 2.

    2.2 If the loop condition is *false*

        2.1.1 then program control passes to
            the first statement
            following the block consisting of statement-1,
        statement-2,…, statement-n.

The for Statement

- The initialization is performed *exactly once*.
- The loop condition is *always* tested before the statement block *executes*.
- The update statement always executes *after* the actions of the statement block.
- The declared, initialized variables *disappear* after the for loop completes execution.



The semantics of the *for* statement

Example

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

You must use for –statement to complete the task.

Example

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

You must use for –statement to complete the task.

Example

```
1
12
123
1234
12345
123456
```

You must use for –statement to complete the task.

Example

Input : 7

```
1
12
123
1234
12345
123456
1234567
```

You have to read the input from user.

You must use for –statement to complete the task.

Example

Input : 5

```
12345
1234
123
12
1
```

You have to read the input from user.

You must use for –statement to complete the task.

Example

Input : 7

```
1
12
123
1234
12345
123456
1234567
```

You have to read the input from user.

You must use for –statement to complete the task.

Example

Input : 7

```
1
 2
  3
   4
    5
     6
      7
```

You have to read the input from user.

You must use for –statement to complete the task.

Example

Input : 4

```
1
12
123
1234
123
12
1
```

You have to read the input from user.

You must use for –statement to complete the task.

Example

- Write a program to receive 2 number from user and display the summation of the value between the inputs, inclusively.

- Assume that the first number is always smaller than the second number.
- You must use for –statement to complete the task.
- You must use while –statement to complete the task.

Example

- Write a program to receive 2 number from user and display the summation of the value between the inputs, inclusively.

- You must use for –statement to complete the task.
- You must use while –statement to complete the task.

Example

- Write a program to receive a number from user and display a factorial of this number.

- You must use for –statement to complete the task.
- You must use while –statement to complete the task.

Example

- Write a program to receive a number from user and display a power of 2 of this number.

- You must use for –statement to complete the task.
- You must use while –statement to complete the task.

Example

- Write a program to receive an integer number to display a multiplication table from 1 to 12.

Example

- Write a program to receive a range of integer number to display a multiplication table from 1 to 12 of all number in the range.

Example

Write a program to receive an integer number and display list of all possible factor number of the input.

Rand() method

- Try the following code

```
public static void main(String[] args) {
        System.out.println(Math.random());
}
```

- Run this for 5 times what is the purpose of this Math.random() .

- What is the possible value of this number?

Example : Guessing Game

- Create a program to receive a number between 1 to 100. The program will receive a number from user and make comparison with the first number.
- If the input is smaller, the program will display “too large”.
- If the input is larger, the program will display “too small”.
- If the input is the same, the program will display “Congratulation”.

- The user has 5 chances to guess the number.

CAMT
College of Arts, Media and Technology
Chiang Mai University

Example : Guessing Game

- Create a program to randomly select a number between 1 to 100. The program will receive a number from user and make comparison with the first number.
- If the input is smaller, the program will display “too large”.
- If the input is larger, the program will display “too small”.
- If the input is the same, the program will display “Congratulation”.
- The user has 5 chances to guess the number.

CAMT
College of Arts, Media and Technology
Chiang Mai University