한양대학교

# OBJECT-ORIENTED SYSTEMS DESIGN (Lab3)

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# 3-1

Write a program *IncomeTax* that prints the output on the next page.

Create a **double** type variable *netIncome* to store input value.

Create a **double** type variable *tax* to store the calculated tax.

This program computes state income tax according to the following rate schedule:

1. No tax is paid on the first $15,000 of net income.
2. A tax of 5% is assessed on each dollar of net income from $15,001 to $30,000.
3. A tax of 10% is assessed on each dollar of net income over $30,000

You should use **if-else** statement.

<output>

Input →

```
Enter net income.
Do not include a dollar sign or any commas.
40000
Tax due = $1750.00
```

# 3-2

Write a program *SwitchDemo* that prints the output on the next page.

Create an **int** type variable *numberOfFlavors* to store input value.

The input is an integer between 1 and 32.

The output is shown when the input is 1, 3, 9, or 32.

If the input is 2 or 4, the output is the same as the output when the input is 3.

Otherwise, the output is the same as the output when the input is 9.

You should use **switch** statement.

<output>

Input →
```
Enter number of ice cream flavors:
1
I bet it's vanilla.
```

Input →
```
Enter number of ice cream flavors:
32
Nice selection.
```

Input →
```
Enter number of ice cream flavors:
3
3 flavors
is acceptable.
```

Input →
```
Enter number of ice cream flavors:
9
I didn't plan for
9 flavors.
```

Write a program *StringComparisonDemo* that prints the output on the next page.

Create a **String** type variables

*s1* storing “Java isn't just for breakfast.”,

*s2* storing “JAVA isn't just for breakfast.”, and

*s3* storing “A cup of java is a joy forever.”.

Compare *s1* and *s 2* by *s1 .equals()*, *s2.equals()* , and *s1.equalsIgnoreCase().*

Compare *s3* and *s 1* by *s3.compareToIgnoreCase ().*

<output>

```
The two lines are not equal.
The two lines are not equal.
But the lines are equal, ignoring case.
"A cup of java is a joy forever."
precedes
"Java isn't just for breakfast."
in alphabetic ordering
```

Write a program *WhileDemo* that prints the output on the next page.

Create an **int** type variable *countDown* whose initial value of the first loop is 3, and initial value of the second loop is 0.

You should use **while** statement and **do-while** statement.

<output>

while loop

```
First while loop:
Hello
Hello
Hello
Second while loop:
First do-while loop:
Hello
Hello
Hello
Second do-while loop:
Hello
```

do-while loop

# 3-5

Write a program *Averager* that prints the output on the next page.

The program calculates the average of scores entered.

If the score is not entered, it shows “No scores entered.”.

Otherwise, consult the output on the next page.

<output>

```
Enter a list of nonnegative scores.
Mark the end with a negative number.
I will compute their average.
87.5 0 89 99.9 -1
4 scores read.
The average is 69.1.
```

Input

Write a program *Averager2* that prints the output on the next page using a **For** statement.

The program calculates the average of scores entered.

If the score is not entered, it shows “No scores entered.”.

Otherwise, consult the output on the next page.

<output>

Input

```
Enter the number of nonnegative scores.
4
Enter a list of 4 nonnegative scores.
I will compute their average.
87.5 0 89 99.9
The average is 69.1.
```

# 3-7

Write a program *CoinFlipDemo* that prints the output on the next page.

Do the following step five times.

step> Create an **int** type variable *coinFlip* to store a randomly generated integer among 0 or 1. If the *coinFlip* is 1, print "Heads". Otherwise, print "Tails".

You should use the **Random** class.

<output> - output may vary.

```
Flip number 1: Heads
Flip number 2: Tails
Flip number 3: Heads
Flip number 4: Heads
Flip number 5: Tails
```