Lab Assignment Week 02

CSC/DSCI 1301 – Principles of CS/DS I

Week of September 2nd, 2024

Introduction

Welcome to the second programming lab of CSC/DSCI 1301! Today, we will be covering the following topics:

- Creating and using variables
- Integer and floating-point arithmetic
- Taking input from the user via the Terminal/Console
- Displaying output on the Terminal/Console
  - Formatting the output
- Using block and inline comments

Lab policy reminders:

- Attendance is mandatory.
- Labs must be completed **individually.**
- TAs are here to help you. Ask them for help!
- Lab assignments are due on Saturdays of the same week.

Deliverables:

1. Python files for all three programs in the lab
2. Screenshots of program output for all three programs

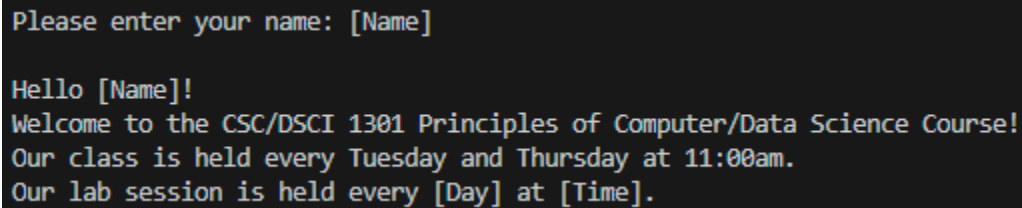If you have any questions, please do not hesitate to ask your TA!

Program 1: introduction.py

For your first program in Python, you will need to replicate the output of the hello.py file that you executed during last week's lab. You will need to make two main changes to the welcome message:

1. First, ask the user for their name and display and include their name in the display message.
2. Alter the message to include the day and times of **the lecture days and your lab session**.

Example Output

Your terminal output should be formatted like the image below.

```
Please enter your name: [Name]

Hello [Name]!
Welcome to the CSC/DSCI 1301 Principles of Computer/Data Science Course!
Our class is held every Tuesday and Thursday at 11:00am.
Our lab session is held every [Day] at [Time].
```

Skills Covered

- Taking input from the user via the Terminal/Console
- Displaying output on the Terminal/Console
  - Formatting the output
- Using block and inline comments

Deliverables

For this program, you will need to provide the Python file containing your code as well as a screenshot of the output of your program. Please name your files as follows:

- Python Files
  - lastname_firstname_filename.py
  - For example: **hawamdeh_faris_intro.py**
- Screenshots
  - lastname_firstname_filename.png
  - For example: **hawamdeh_faris_intro.png**
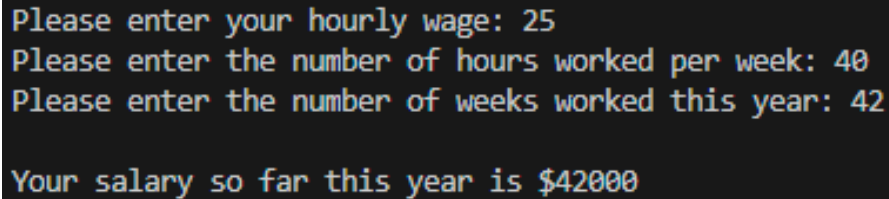
Program 2: salary.py

For your second program, you will write a calculator program that uses information the user enters to calculate their annual salary. You will be reinforcing the programming skills from Program 1 and learning to program integer arithmetic expressions in Python. You will need to gather the following information from the user:

1. Wage: The dollar amount they get paid per hour.
2. Hours: The number of hours worked per week.
3. Weeks: The number of weeks worked this year.

The output of this program should be their calculated salary based on the data values entered.

Example Output

Your terminal output should be formatted like the image below.

```
Please enter your hourly wage: 25
Please enter the number of hours worked per week: 40
Please enter the number of weeks worked this year: 42


Your salary so far this year is $42000
```

Skills Covered
- Creating and using variables
- Taking input from the user via the Terminal/Console
- Integer arithmetic
- Displaying output on the Terminal/Console
  - Formatting the output
- Using block and inline comments

Deliverables

For this program, you will need to provide the Python file containing your code as well as a screenshot of the output of your program. Please name your files as follows:

- Python Files
  - lastname_firstname_filename.py
  - For example: **hawamdeh_faris_salary.py**
- Screenshots
  - lastname_firstname_filename.png
  - For example: **hawamdeh_faris_salary.png**

Program 3: interest.py

For your third program, you will write a program that calculates the compound interest paid on a loan. You will reinforce the programming skills from the previous programs and learn to program floating-point arithmetic expressions in Python. To calculate compound interest, you will need to gather the following information from the user:

4. Principal: The original loan amount.
5. Term: The length of the loan in months.
6. Rate: The annual interest rate of the loan in decimal.

The formula for compound interest is shown below. You will need to write a Python expression for the following formula:

$$Total\ Cost = Principal * \left(1 + \frac{Interest\ Rate}{12}\right)^{Number\ of\ Months}$$

The output of this program should be the amount of interest paid on the loan. Subtract the original principal from the Total Cost calculated using the equation above to get only the additional interest!

Example Output

Your terminal output should be formatted like the image below.

```
Please enter the loan principal: 5000
Please enter the loan term in months: 60
Please enter the annual interest rate of the loan in decimal: 0.07

The amount of interest in this loan is $2088.13
```

Skills Covered

- Creating and using variables
- Taking input from the user via the Terminal/Console
- Integer and Floating-point arithmetic
- Displaying output on the Terminal/Console
  - Formatting the output
- Using block and inline comments

Deliverables

For this program, you will need to submit the Python file containing your code as well as a screenshot of the output of your program. Please name your files as follows:

- Python Files
  - lastname_firstname_filename.py
  - For example: **hawamdeh_faris_interest.py**
- Screenshots
  - lastname_firstname_filename.png
  - For example: **hawamdeh_faris_interest.png**