Lab Assignment Week 05

CSC/DSCI 1301 – Principles of CS/DS I

Week of February 5th, 2024

Introduction

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

- Creating if-elseif-else statements
- Creating nested if-statements
- Writing Conditional Expressions
- Using Logical Operators

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 at the end of each lab.

Deliverables:

1. Python files for all 3 programs in the lab
2. Screenshots of program output for all 3 programs

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

Program 1: speeding.py

Write a program that is given two integers representing a speed limit and driving speed in miles per hour (mph) and outputs the traffic ticket amount.

Speed Conditions:

1. Driving 10 mph under the speed limit (or slower) receives a $50 ticket.
2. Driving 6 - 20 mph over the speed limit receives a $75 ticket.
3. Driving 21 - 40 mph over the speed limit receives a $150 ticket.
4. Driving faster than 40 mph over the speed limit receives a $300 ticket.
5. Otherwise, no ticket is received.

Example Output

```
Please enter the speed limit for the road: 30
Please enter the vehicle's recorded speed: 45
The speeding fine is $75.
```

```
Please enter the speed limit for the road: 60
Please enter the vehicle's recorded speed: 55
There is no fine.
```

Skills Covered

- Creating if-elseif-else statements
- Writing Conditional Expressions

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_speeding.py**
- Screenshots
  - lastname_firstname_filename.png
  - For example: **hawamdeh_faris_speeding.png**

Program 2: interstate.py

Primary U.S. interstate highways are numbered 1-99. Odd numbers (like the 5 or 95) go north/south, and evens (like the 10 or 90) go east/west. Auxiliary highways are numbered 100-999, and service the primary highway indicated by the rightmost two digits. Thus, I-405 services I-5, and I-290 services I-90. Your program must also be able to detect invalid highway numbers. Note: 200 is not a valid auxiliary highway because 00 is not a valid primary highway number.

```
Please enter an interstate number:200
200 is not a valid interstate highway number.
```

Given a highway number, indicate whether it is a primary, auxiliary highway or an invalid highway number. If auxiliary, indicate what primary highway it serves. Also indicate if the (primary) highway runs north/south or east/west.

Example Output

```
Please enter an interstate number:285
I-285 is auxiliary, serving I-85, going north/south.
```

```
Please enter an interstate number:85
I-85 is primary, going north/south.
```

Skills Covered

- Creating if-elseif-else statements
- Creating nested if-statements
- Writing Conditional Expressions
- Using Logical Operators

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_interstate.py**
- Screenshots
  - lastname_firstname_filename.png
  - For example: **hawamdeh_faris_interstate.png**

Program 3: median.py

Write a program that takes in three integers and outputs the median value (not the largest or smallest value).

Example Output:

```
Please enter the first number: 13
Please enter the second number: 19
Please enter the third number: 4
The median number is  13
```

Skills Covered

- Creating if-elseif statements
- Writing Conditional Expressions
- Using Logical Operators

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_median.py**
- Screenshots
    - lastname_firstname_filename.png
    - For example: **hawamdeh_faris_median.png**