Name(s): _____

DATA 101 Assignment 5: Python

Work in teams of 2

Instructions. Create a new Jupyter Notebook. Remember to use the cell types Markdown for text explanations/titles and Code for Python code. Show all your text explanations and code. Once you complete the assignment save your file as `python_is_fun.ipynb`. Print your jupyter notebook file and bring your assignment with you to class on Monday. To export your notebook, you can click on `File → Save and export notebook as → HTML (.html)` (don't forget to allow for pop-ups) then print the `.html` file using any browser. (you can double click on an `.html` file.)

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1. Complete the `Introduction to Python` course on DataCamp: https://app.datacamp.com/learn/courses/intro-to-python-for-data-science Please check your email inbox for a free DataCamp sign-up link that I sent a few weeks ago. Make sure to use your Dickinson email address when you sign up. Note that you get 6 month access to the entire DataCamp course catalogue, so feel free to explore more than what you are assigned.

2. Convert your first cell into Markdown type and do the following:

(a) Write a bold title: `Here begins the assignment`.

(b) Add a short italicized motto for yourself (e.g., could be short like *Code* > *Sleep*, or something longer like a quote).

(c) Make a bulleted list of your 3 hobbies.

(d) Write and display 3 of your favorite emojis. (e.g.,  ,  , )

3. Suppose you are budgeting for snacks. A burger costs 6.75, fries 2.50, and a soda 1.75.

(a) Create variables for each item, and compute the total cost for 3 burgers, 2 fries, and 4 sodas.

(b) Let x, y, and z be the number of burgers, fries, and sodas you want to order. Write code that multiplies each by its price and computes the new total.

(c) Write an if–else that prints `"too expensive"` if the total from (b) is greater than $25, else print `"affordable"`.

4. (a) Write a for loop that prints:

```
Python is fun! (1)
Python is fun! (2)
Python is fun! (3)
Python is fun! (4)
Python is fun! (5)
```

(b) Write a for loop that prints the squares of numbers 1 through 10 in the form:

```
1 squared is 1
2 squared is 4
...
10 squared is 100
```

5. (a) Write a function `cheer(name)` that takes someone's name and returns a string like `"Go Eren!!!"`. Test it with three different names.

(b) Write a function `echo(word, times)` that repeats a word the given number of times with spaces in between. Example: `echo("hi", 3)` → `"hi hi hi"`.

6. (a) Import NumPy. Simulate rolling a six-sided die 100 times. Show the first 10 rolls and compute the mean roll. (*Hint: Use np.random.randint()*). Read more here.

(b) Simulate heights of 200 people with mean = 170 cm and SD = 10. Round to 1 decimal and print the tallest height. (*Hint: Use the numpy function we used in class.*)

7. Read in the following data from Mario Kart to your python session: https://github.com/rfordatascience/tidytuesday/raw/refs/heads/main/data/2021/2021-05-25/records.csv Name your dataframe object as `df`.

(a) Show the first 7 rows.

(b) Show how many rows and columns the dataset has.

(c) Find the mean `record_duration`.

(d) Repeat (c) but for the Rainbow Road track only.

(e) Repeat (c) for `type = Single Lap and Three Lap`.

8. (a) Make a histogram of `record_duration`. Choose a color you like and make sure to label your axes.

(b) Make a scatterplot of x=`time` and y=`record_duration`. Choose a color your like for the dots and make sure to label your axes.