Assignment One: Python Basics for Linear Algebra

Math 264
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Objective

To test your understanding of the foundational Python concepts that will be used throughout our linear algebra course.

Instructions

1. Create a new Jupyter Notebook on Google Colab. the name of the file should be your $Firstname\_lastname$.
2. Complete each of the tasks below.
3. Make sure to comment on your code to explain your thought process.
4. Submit the shareable link to your completed notebook in MS team.

Tasks

1. Printing and Basic Operations

1. Print a greeting message introducing yourself.
2. Perform the following mathematical operations and print the results:
   - $45 + 32$
   - $100 - 56$
   - 7×9
   - $144 \div 12$

2. Variables

1. Store your favorite number in a variable called ‘fav_num‘.
2. Store your name in a variable called ‘name‘.
3. Calculate the number of characters in your name and store it in a variable called ‘name_length‘.
4. Print a message using the ‘fav_num‘, ‘name‘, and ‘name_length‘ variables, such as ”My favorite number is 7, my name is Rebin, and my name has 5 characters.”

3. Working with Objects

1. Create a list named `courses` and add the names of three courses you're taking this semester.
2. Print the name of the first course in the list.
3. Store the phrase "linear algebra is fun" in a string variable and print it in uppercase.

4. Modules and Math

1. Import the `math` module.
2. Calculate and print the square root of 256 using the `math` module.
3. Using the `math` module, print the value of π rounded to 3 decimal places.
4. Create two variables, `angle_deg` and `angle_rad`. Store a value of 45 degrees in `angle_deg` and convert this to radians, storing the result in `angle_rad`. Print `angle_rad`.

5. Challenge Task: Lists and Math

1. Create a list named `matrices` and add three nested lists, each representing a 1x3 matrix. For example: `[[1, 2, 3], [4, 5, 6], [7, 8, 9]]`.
2. Print the second element of the second matrix.

Submission

Once you've completed all tasks, save your notebook and create a shareable link. Submit this link as your assignment.