Python Beginner Labs

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Lab 1 – Print, Comments & Variables

Goals

- Learn how to display text using print()

- Understand how to declare and use variables

- Write clear comments

Concept Brief

In Python, print() shows messages on the screen. Variables are like boxes where you store values.

Comments help explain your code and are ignored by Python.

Example:

```
# This is a comment
name = "Alice"
print("Hello", name)
```

Tasks

- Use multiple print() statements to display your name as ASCII art(Google what is ASCII art).

- Create variables: name, birth_year, fun_fact. Print them in a full sentence.

Example:

“My name is … and I’ve born in … and here is a fact about me: …”

- Change your age variable from 20 to 25 and reprint your message.

- Ask the user for their name using input() and greet them using print().

Stretch Task

Create a “Quote of the Day” program: Store 5 different quotes in variables and print one randomly (store quotes manually or via user input).

Reflection

- What confused you today?

- How is a variable different from just printing?

- What was the most satisfying part?

Lab 2 – Input & Data Types

Goals

- Read user input with input()

- Convert types between int, float, and str

- Use type() to understand what you're working with

Concept Brief

By default, input() returns a string. Use int() or float() to convert it.

Example:
age = input("Your age: ")
age = int(age)
print("In 5 years you'll be", age + 5)

Tasks

- Ask for a number and print its type using type().

- Convert a user-entered number to int, then multiply it by 3.

- Ask for the user's name and age, then print a message.

- Ask user for two number input and print those numbers' sum, product, and average.

Stretch Task

Ask user for height (cm) and weight (kg), calculate their BMI. Hint: convert cm to meters.

BMI = weight(kg)/ height(m)^2

Reflection

- Did you run into type errors?

- How did you know what kind of variable you had?

Lab 3 – Conditionals (if / else)

Goals

- Make decisions in code using if, elif, else

- Use logical and comparison operators

Concept Brief

Python runs only the first if or elif that is True.

Example:

```
if age < 18:
   print("Minor")
elif age < 65:
   print("Adult")
else:
   print("Senior")
```

Tasks

- Ask the user for a number and print whether it's positive, negative, or zero.

- Ask the user for their age and provide voting eligibility feedback.

- Create a simple Rock-Paper-Scissors checker, user inputs one and computer selects one randomly. Print who selected what and who wins.

Stretch Task

Ask the user for a year and print whether it’s a leap year (Google the formula).

Reflection

- What makes a good conditional?

- How could you make the logic easier to read?

Lab 4 – Loops (for / while)

Goals

- Repeat tasks using while and for loops

- Understand break, continue

Concept Brief

Loops allow you to run a block of code multiple times.

Examples:

```
for i in range(5):
   print("Hello")

while True:
   guess = input("Guess: ")
```

```
if guess == "42":
    break
```

Tasks

- Print numbers 1–20 using both for and while loops.

- Ask the user to guess a secret number you choose and hardcode until they get it right.

- Print the multiplication table of a user-entered number up to 10.

Stretch Task

Implement FizzBuzz from 1 to 100.

Hint:

Print "Fizz" for numbers divisible by 3 (ex. 3, 6, 9 …),

"Buzz" for 5 (ex. 5, 10, 15 …),

"FizzBuzz" for both (ex. 15, 30, 45 …)

Else, print the number itself.

Reflection

- What's the difference between for and while?

- Did you accidentally create an infinite loop? How?

Lab 5 – Lists

Goals

- Learn to create and manipulate lists

- Practice indexing, slicing, looping, and list methods

Concept Brief

Lists store multiple values. You can access them by index.

Example:

```
movies = ["Inception", "Shrek"]
print(movies[0])
movies.append("Tenet")
```

Tasks

- Create a list of 5 favorite movies. Print the third one.

- Add 2 more movies. Remove 1.

- Loop through the list and print each movie in UPPERCASE.

- Ask the user to enter 3 movies, store them in a list, then print all.

Stretch Task

Create a list of 10 numbers. Print how many are even and sum of all odd numbers.

Reflection

- What did you find confusing about list indexing?

- How would you explain append() vs remove()?