

Lab Activity

Week 6: Planning Before Coding

Duration: 30 minutes — Work in pairs!

Name: _____ Partner: _____

Lab Goals

By the end of this lab, you will be able to:

- Write simple pseudocode to plan a program
- Convert pseudocode into Python code
- Read and complete basic flowcharts

Getting Started

1. Extract the given [week6_lab.zip](#) file to your desktop. This folder contains all the files you need for this lab.

1 Exercise 1: Pseudocode to Python (5 minutes)

Let's write pseudocode for a simple greeting program:

Problem: Create a program that asks for someone's name and age, then tells them their age next year.

Step 1: Read the following pseudocode:

Pseudocode

1. Ask user for their name
2. Get the name and store it
3. Ask user for their age
4. Get the age and store it
5. Add 1 to the age
6. Display: "[name], next year you'll be [new age]!"

Step 2:

Open [week6_ex1.1.py](#). Write the Python code based on the pseudocode given above:

```
1 # Exercise 1: Convert pseudocode to Python
2 # Step 1 & 2: Get name
3
4 # Step 3 & 4: Get age
5
6 # Step 5: Calculate next year's age
7
8 # Step 6: Display result
9 print(f"{name}, next year you'll be {next_age}!")
```

✔ Checkpoint: Show your teacher the working program!

💡 Tip: Pseudocode doesn't need perfect grammar - just clear steps!

2 Exercise 2: Writing Pseudocode (10 minutes)

Suppose you want to calculate the area of a rectangle. Write pseudocode first to get the length and width from the user, then calculate the area.

```
Pseudocode
1. Ask -----
2. Ask -----
3. Calculate -----
4. Display "The area is [area]"
```

Now convert the above pseudocode into running Python code:

```
1 # Rectangle area calculator
2 # Step 1: Get length
3
4 # Step 2: Get width
5
6 # Step 3: Calculate area
7 area = -----
8
9 # Step 4: Display result
10 print(f"The area is -----")
```

Test with:

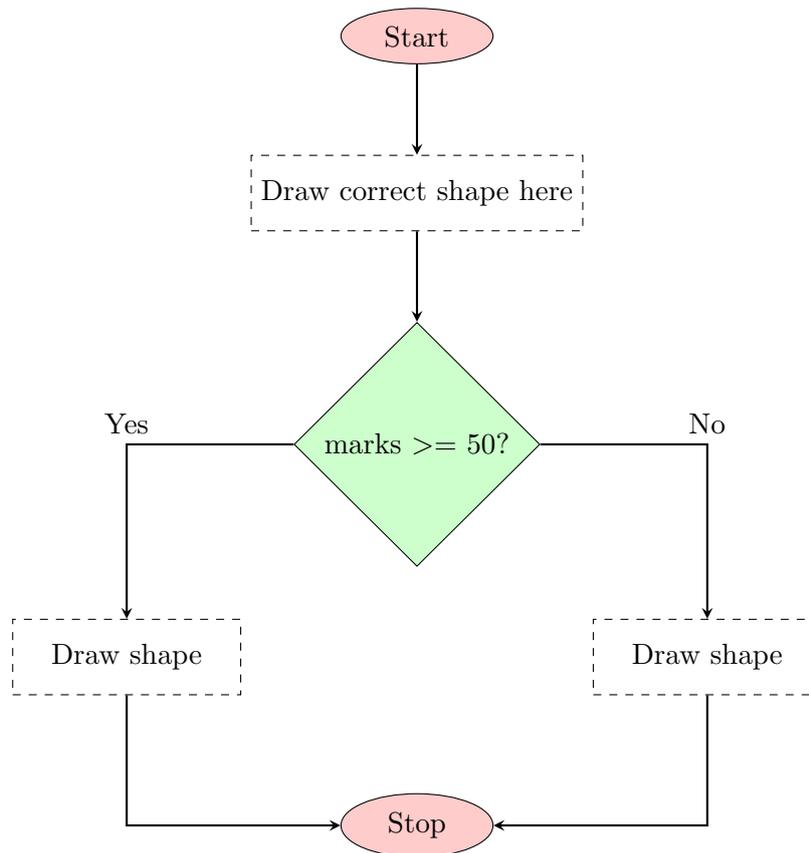
- Length = 5, Width = 3, Area should be 15
- Length = 10, Width = 7, Area should be 70

✔ Checkpoint: Calculator working correctly? Great job!

👥 Pair Programming: Switch who types every 5 minutes!

3 Exercise 3: Complete the Flowchart (10 minutes)

Here's a flowchart for checking if someone passes a test (need 50 or more marks). Some shapes are missing - draw them in the empty boxes!



Questions:

1. What shape should you draw for getting the marks input? _____
2. What shape should you draw for displaying “Pass” or “Fail”? _____
3. *(Optional)* Now write Python code for this flowchart:

```

1 # Test pass checker
2 marks = _____
3
4 if marks >= 50:
5     print(_____)
6 else:
7     print(_____)
    
```

4 Exercise 4: Quick Quiz (5 minutes)

Circle the correct answer:

1. What is the first step in solving any programming problem?
 - A. Start typing code
 - B. Plan your solution
 - C. Run the program
 - D. Debug errors
2. In a flowchart, which shape represents a decision (if/else)?
 - A. Rectangle

- B. Oval
 - C. Diamond
 - D. Parallelogram
3. What does this pseudocode do?
1. Get number
 2. Multiply number by 2
 3. Display result
- A. Adds 2 to a number
 - B. Doubles a number
 - C. Divides by 2
 - D. Squares a number
4. Which is not a benefit of writing pseudocode?
- A. Helps organize thoughts
 - B. Makes code run faster
 - C. Spots problems early
 - D. Easier to explain to others

5 Exercise 5: Bonus Challenge - Pizza Party Planner (5 minutes)

For students who finish early:

On a separate clean piece of paper, write pseudocode for a pizza party planner program that asks how many students are coming, calculates how many pizzas to order, and tells how many slices will be left over. You can assume that each pizza has 8 slices and each student eats 3 slices.

Once you have written the pseudocode, convert it to Python code.

Write the Python code:

Open [week6_ex5_pizza.py](#) and write the code based on your pseudocode.

Example: If 10 students come: need we 30 slices = 4 pizzas (32 slices), 2 slices left over!

6 Lab Summary

 **Checkpoint:** Final checkpoint - make sure you have:

- Completed all exercises with your partner
- Written pseudocode for a simple program
- Converted pseudocode to Python
- Completed the flowchart exercise
- Shown checkpoints to your teacher

Reflection (2 minutes)

Rate your understanding of today's concepts:

Concept	☹️ Need Help	😊 Getting It	😄 Got It!
Writing pseudocode	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reading flowcharts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Planning before coding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

One thing I learned today: _____

One thing I'm still confused about: _____

😊 Great work today!