

Homework Assignment

Week 7: Making Decisions with if Statements

Total Points: 100 — Due: Next Class



Name: _____

Date: _____

Important Instructions

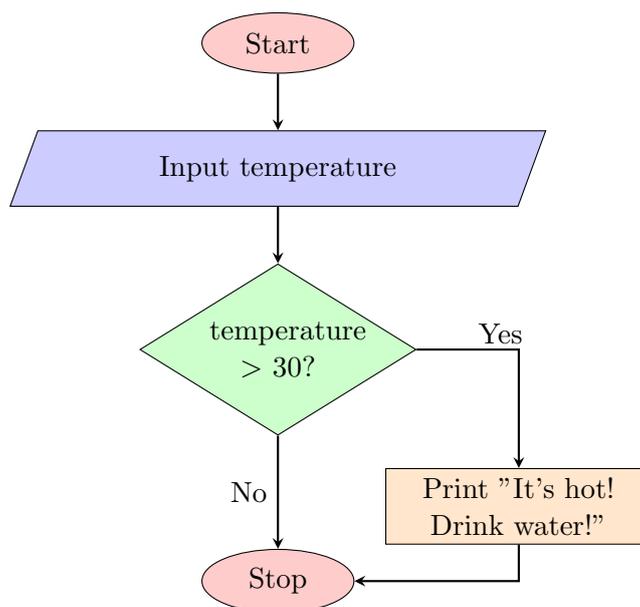
- Work on your own, but you may ask family members for hints only if stuck
- Write your code in Python (*using Thonny or any online IDE*)
- For setting up your code files, kindly see `instructions.pdf`
- For written answers, use the spaces provided on this sheet
- Show your work for full credit!

1 Part 1: Translation Practice (15 points)

Time estimate: 20 minutes

1.1 Exercise 1.1: Flowchart to if Statement (8 points)

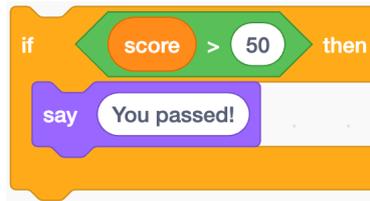
Convert this flowchart to Python code using an if statement:



Open [week7_ex1.1.py](#) and convert the above flowchart to Python code.

1.2 Exercise 1.2: Scratch to Python (7 points)

Convert this Scratch logic to Python:



Open [week7_ex1.2.py](#) and write the equivalent Python code using an if statement.

2 Part 2: Code Completion Practice (20 points)

Time estimate: 25 minutes

2.1 Exercise 2.1: Movie Ticket Pricing (10 points)

Open [week7_ex2.1.py](#) and complete the following code that calculates movie ticket prices based on age:

```

1  # Smart Movie Ticket System
2  print("=== Cinema Ticket Pricing ===")
3
4  # Get customer age
5  age = int(input("Enter your age: "))
6
7  # Regular ticket price
8  regular_price = 250
9
10 # Check if eligible for child discount (12 or under)
11 ----- age ----- 12:          # Complete the if condition
12     ticket_price = regular_price * 0.5    # 50% discount
13     print("Child discount applied!")
14
15 # Check if eligible for senior discount (60 or above)
16 ----- age ----- :          # Complete the if condition
17     ticket_price = regular_price * 0.7    # 30% discount
18     print("Senior discount applied!")
19
20 # Check if student age (13-25)
21 ----- age >= 13 ----- <= 25:
22     ticket_price = regular_price * 0.8    # 20% discount
23     print("Student discount applied!")
24
25 print(f"Your ticket price: Rs. {-----}")

```

2.2 Exercise 2.2: Login Security Check (10 points)

Open [week7_ex2.2.py](#) and complete the following code to create a simple security system that checks password strength and access:

```

1  # Security Login System
2  correct_password = "python123"
3  max_length = 15
4  min_length = 6

```

```

5
6 user_password = input("Create a password: ")
7 password_length = len(user_password)
8
9 # Check if password is too short
10 if _____: # Check length < minimum
11     print("Password too short! Must be at least 6 characters.")
12
13 # Check if password is too long
14 _____ # Write complete if statement
15     _____ # Print appropriate message
16
17 # Check if password matches the correct one
18 if user_password _____ correct_password: # Use correct operator
19     print("Welcome! Access granted.")

```

3 Part 3: Code Ordering Challenge (12 points)

Time estimate: 15 minutes

3.1 Exercise 3.1: Temperature Converter Logic (6 points)

Put these lines in the correct order to create a temperature warning system:

| Order | Code Line |
|--------|--|
| -- | if celsius > 35: |
| line 1 | print("Temperature Warning System") |
| -- | print("Extreme heat warning!") |
| -- | celsius = float(input("Enter temperature in Celsius: ")) |
| -- | if celsius < 0: |
| -- | print("Freezing warning! Roads may be icy.") |
| -- | print("Stay safe!") |

3.2 Exercise 3.2: Grade Feedback System (6 points)

Order these lines to create a grade message program:

| Order | Code Line |
|--------|--|
| -- | print(f"Score: {marks}%") |
| -- | marks = int(input("Enter your marks (0-100): ")) |
| -- | if marks >= 90: |
| -- | print("Grade: A") |
| line 1 | print("=== Grade Calculator ===") |
| -- | if marks >= 80: |
| -- | print("Excellent work!") |
| -- | print("Grade: B") |

4 Part 4: Problem Solving with Conditions (18 points)

Time estimate: 25 minutes

4.1 Exercise 4.1: Shop Discount Calculator (8 points)

Scenario: Eid Shopping Discount

A clothing shop offers special Eid discounts:

- Purchases above Rs. 5000 get 20% off
- Purchases above Rs. 3000 get 10% off
- Purchases above Rs. 1500 get 5% off
- No discount for purchases Rs. 1500 or less

Open [week7_ex4.1.py](#) and complete the following code to calculate the discount based on the purchase amount:

```

1  # Eid Shopping Discount Calculator
2  print("Welcome to Eid Special Sale!")
3  purchase_amount = float(input("Enter total purchase amount: Rs. "))
4
5  # Check for 20% discount
6  if -----:
7      discount = purchase_amount * 0.20
8      final_amount = -----
9      print("Congratulations! You get 20% off!")
10     print(f"Discount: Rs. {discount}")
11     print(f"Final amount: Rs. {final_amount}")
12
13 # Check for 10% discount
14 -----
15 -----
16 -----
17 -----
18 -----
19
20 # Continue with 5% discount check...

```

5 Part 5: Code Tracing (10 points)

Time estimate: 15 minutes

5.1 Exercise 5.1: Trace the Decision Path (10 points)

For each value of 'speed', trace through the code (without running it) and write what will be printed:

```

1  # Speed Limit Checker
2  speed_limit = 60
3
4  # Test with different speeds
5  speed = int(input("Enter your speed in km/h: "))
6
7  if speed > speed_limit + 20:
8      print("Dangerous speeding! Heavy fine.")
9  if speed > speed_limit:
10     print("You are over the speed limit.")
11  if speed == speed_limit:
12     print("Perfect! Exactly at the limit.")
13  if speed < speed_limit:

```

```
14 print("Good - under the speed limit.")
```

Fill in what prints for each speed value:

| speed | Conditions True | Output |
|-------|-----------------|--------|
| 45 | | |
| 60 | | |
| 75 | | |
| 85 | | |

6 Part 6: Program Development (20 points)

Time estimate: 30 minutes

Create a program that helps students check what they can buy from the school canteen.

Program Requirements

Your program should:

1. Ask for the student’s daily allowance
2. Display the menu (4 items with fixed prices)
3. Show which items the student can afford
4. Check for special combo deals
5. Give a budget recommendation

Menu Items:

- Sandwich - Rs. 80
- Juice - Rs. 40
- Samosa - Rs. 30
- Fruit Cup - Rs. 50

Special Deals:

- Sandwich + Juice = Rs. 110 (saves Rs. 10)
- Samosa + Juice = Rs. 60 (saves Rs. 10)

Budget Tips: Use separate if statements to check and display the appropriate tip:

- If allowance is less than 30: “You cannot afford any items”
- If allowance is between 30 and 50: “You can only afford a Samosa”

- If allowance is between 60 and 80: “Try the Samosa + Juice combo!”
- If allowance is greater than 110: “Get the Sandwich + Juice combo for best value!”

Sample Output:

```

=== School Canteen Helper ===
Enter your daily allowance: Rs. 120

Menu:
1. Sandwich - Rs. 80
2. Juice - Rs. 40
3. Samosa - Rs. 30
4. Fruit Cup - Rs. 50

You can afford:
- Sandwich
- Juice
- Samosa
- Fruit Cup

Special Deals Available:
- Sandwich + Juice combo = Rs. 110 (Save Rs. 10!)
- Samosa + Juice combo = Rs. 60 (Save Rs. 10!)

Budget Tip: Get the Sandwich + Juice combo for best value!
    
```

Open [week7_ex6.py](#) and implement the program. Use only if statements (*you are free to use elif/else but not required at all for this exercise. We will study these next week*).

Testing Checklist:

- Program runs without errors
- Correctly identifies affordable items
- Combo deal logic works properly
- Gives appropriate recommendations
- Handles edge cases (very low or high allowance)
- Output is well-formatted

7 Part 7: Reflection Questions (5 points)

Time estimate: 10 minutes

Answer these questions in complete sentences:

1. What was the most challenging part about learning if statements? How is it different from the selection blocks in Scratch?

2. Why is indentation so important in Python if statements? What happens if you forget to indent?

3. Think of a real decision you made today (like what to wear or eat). How would you express it as an if statement?

8 Bonus Section: Extra Challenge (Optional - 10 extra points)

8.1 Challenge 1: ATM Withdrawal Checker (5 points)

Open [week7_ex8.1.py](#) and complete the following code to check if an ATM withdrawal is possible: ATM must check:

- Account has enough balance
- Amount is multiple of 500 (*ATM only has 500 rupee notes*)
- Amount is between 500 and 20,000 (*ATM limits*)
- Not more than 3 withdrawals today

```

1 balance = 15000
2 withdrawal_amount = int(input("Enter withdrawal amount: "))
3 daily_withdrawals = 2 # Already made 2 withdrawals today
4
5 # Your code here...

```

Sample Output 1:

Enter withdrawal amount: 2500

Transaction Approved!
 Dispensing Rs. 2500
 Remaining balance: Rs. 12500
 Daily withdrawals used: 3/3

Sample Output 2:

Enter withdrawal amount: 1200

Transaction Declined!
 Reason: Amount must be multiple of 500!
 Current balance: Rs. 15000
 Daily withdrawals used: 2/3

Sample Output 2:

Enter withdrawal amount: 25000

Transaction Declined!

Reason: Maximum withdrawal limit is Rs. 20,000!

Current balance: Rs. 15000

Daily withdrawals used: 2/3

Submission Checklist

Before submitting, make sure you have:

- Completed all required sections
- Tested each code file individually to ensure it runs without errors
- Answered all reflection questions
- Attempted bonus section (optional)
- Compressed your code files into a single zip file named `week7_hw.zip`

Time Tracking:

How long did this homework take you? _____ hours

Parent/Guardian Signature: _____

(Confirming student completed work independently)

Excellent work making Python think and decide!

Next week: Multiple Paths with else and elif