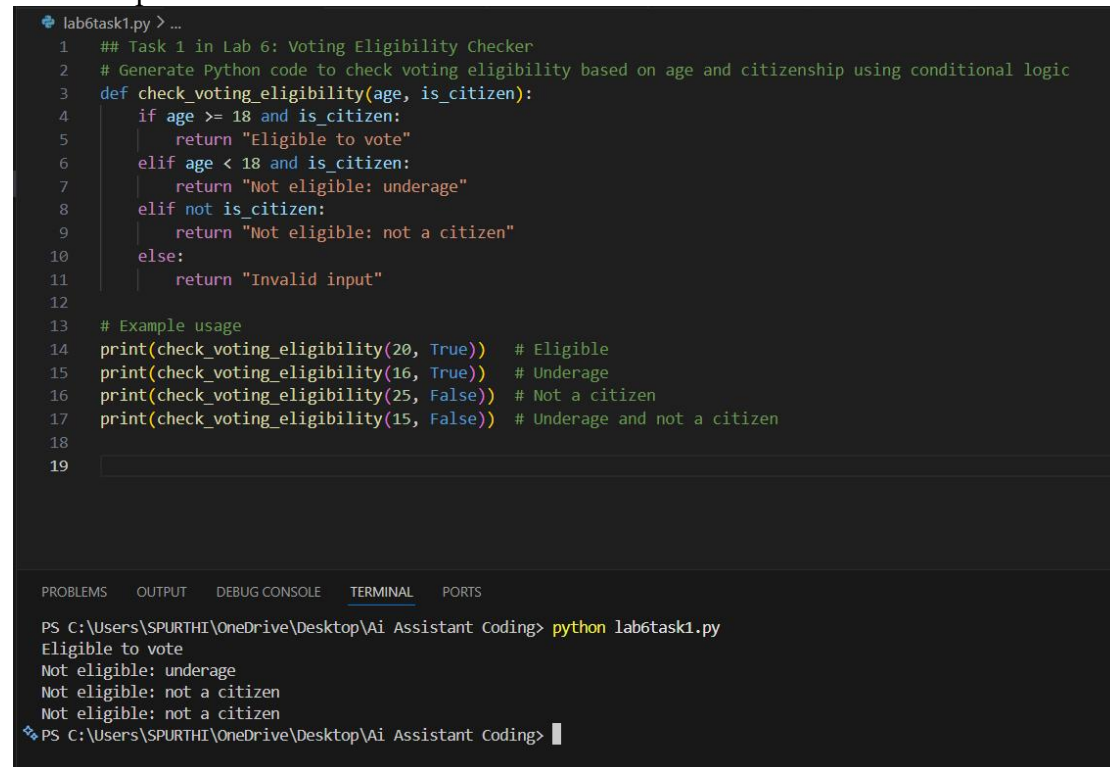


**AI Assisted Coding**  
**2303A51802**  
**Billa Spurthi**  
**Batch 29**

**Assignment Number: 6.5**

**Task 1 Prompt:**

“Generate Python code to check voting eligibility based on age and citizenship.”



```
lab6task1.py > ...
1  ## Task 1 in Lab 6: Voting Eligibility Checker
2  # Generate Python code to check voting eligibility based on age and citizenship using conditional logic
3  def check_voting_eligibility(age, is_citizen):
4      if age >= 18 and is_citizen:
5          return "Eligible to vote"
6      elif age < 18 and is_citizen:
7          return "Not eligible: underage"
8      elif not is_citizen:
9          return "Not eligible: not a citizen"
10     else:
11         return "Invalid input"
12
13 # Example usage
14 print(check_voting_eligibility(20, True)) # Eligible
15 print(check_voting_eligibility(16, True)) # Underage
16 print(check_voting_eligibility(25, False)) # Not a citizen
17 print(check_voting_eligibility(15, False)) # Underage and not a citizen
18
19
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\SPURTHI\OneDrive\Desktop\Ai Assistant Coding> python lab6task1.py
Eligible to vote
Not eligible: underage
Not eligible: not a citizen
Not eligible: not a citizen
PS C:\Users\SPURTHI\OneDrive\Desktop\Ai Assistant Coding>
```

**Explanation**

`def check_voting_eligibility(age, is_citizen):` → Defines a function with two inputs: age (number) and citizenship (boolean).

`if age >= 18 and is_citizen:` → Checks if the person is at least 18 **and** a citizen. If true, they can vote.

`elif age < 18 and is_citizen:` → If they are a citizen but under 18, they're not eligible.

`elif not is_citizen:` → If they're not a citizen, they're not eligible regardless of age.

`else:` → Handles invalid inputs (e.g., negative age).

## Task 2 Prompt

“Generate Python code to count vowels and consonants in a string using a loop.”

```
lab6task2.py > count_vowels_and_consonants
1 # Generate Python code to count vowels and consonants in a string using a loop.
2 def count_vowels_and_consonants(text):
3     vowels = "aeiouAEIOU"
4     vowel_count = 0
5     consonant_count = 0
6
7     for char in text:
8         if char.isalpha():
9             if char in vowels:
10                 vowel_count += 1
11             else:
12                 consonant_count += 1
13
14     return vowel_count, consonant_count
15
16 # Example usage
17 text = "Hello World"
18 vowels, consonants = count_vowels_and_consonants(text)
19 print(f"Vowels: {vowels}, Consonants: {consonants}")
20
21
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\SPURTHI\OneDrive\Desktop\Ai Assistant Coding> python lab6task2.py
Vowels: 3, Consonants: 7
PS C:\Users\SPURTHI\OneDrive\Desktop\Ai Assistant Coding>
```

## Explanation

`vowels = "aeiouAEIOU"` → Defines which letters are vowels.

`for char in text:` → Loops through each character in the string.

`if char.isalpha():` → Ensures only letters are counted (ignores spaces, punctuation).

`if char in vowels:` → If the character is a vowel, increment `vowel_count`.

`else:` → Otherwise, it's a consonant, so increment `consonant_count`.

Returns both counts.

### Task 3 Prompt

“Generate a Python program for a library management system using classes, loops, and conditional statements.”

```
lab6task3.py > Book > __init__
1  # Generate a Python program for a library management system using classes, loops, and conditional statements.
2  class Book:
3      def __init__(self, title, author):
4          self.title = title
5          self.author = author
6          self.is_available = True
7
8  class Library:
9      def __init__(self):
10         self.books = []
11
12         def add_book(self, book):
13             self.books.append(book)
14
15         def display_books(self):
16             for book in self.books:
17                 status = "Available" if book.is_available else "Checked Out"
18                 print(f"{book.title} by {book.author} - {status}")
19
20         def borrow_book(self, title):
21             for book in self.books:
22                 if book.title.lower() == title.lower() and book.is_available:
23                     book.is_available = False
24
25         def return_book(self, title):
26             for book in self.books:
27                 if book.title.lower() == title.lower() and not book.is_available:
28                     book.is_available = True
29
30         def search_books(self, keyword):
31             for book in self.books:
32                 if keyword in book.title or keyword in book.author:
33                     print(f"{book.title} by {book.author} - {book.is_available}")
34
35         def __str__(self):
36             return f"Library with {len(self.books)} books."
37
38         def __repr__(self):
39             return f"Library({self.books})"
40
41         def __len__(self):
42             return len(self.books)
43
44         def __getitem__(self, index):
45             return self.books[index]
46
47         def __setitem__(self, index, book):
48             self.books[index] = book
49
50         def __delitem__(self, index):
51             del self.books[index]
52
53         def __iter__(self):
54             return iter(self.books)
55
56         def __contains__(self, book):
57             return book in self.books
58
59         def __eq__(self, other):
60             return self.books == other.books
61
62         def __ne__(self, other):
63             return self.books != other.books
64
65         def __lt__(self, other):
66             return len(self.books) < len(other.books)
67
68         def __le__(self, other):
69             return len(self.books) <= len(other.books)
70
71         def __gt__(self, other):
72             return len(self.books) > len(other.books)
73
74         def __ge__(self, other):
75             return len(self.books) >= len(other.books)
76
77         def __hash__(self):
78             return hash(tuple(self.books))
79
80         def __add__(self, other):
81             return self + other
82
83         def __sub__(self, other):
84             return self - other
85
86         def __mul__(self, other):
87             return self * other
88
89         def __div__(self, other):
90             return self / other
91
92         def __mod__(self, other):
93             return self % other
94
95         def __pow__(self, other):
96             return self ** other
97
98         def __call__(self):
99             return self
100
101         def __getattr__(self, name):
102             return getattr(self, name)
103
104         def __setattr__(self, name, value):
105             setattr(self, name, value)
106
107         def __delattr__(self, name):
108             delattr(self, name)
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110         def __dir__(self):
111             return dir(self)
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```

## Task 4 Prompt

Generate a Python class to mark and display student attendance using loops.

```
lab6task4.py > ...
1  # Generate a Python class to mark and display student attendance using loops.
2  class Attendance:
3      def __init__(self):
4          self.records = {}
5
6      def mark_attendance(self, student_name, present=True):
7          self.records[student_name] = "Present" if present else "Absent"
8
9      def display_attendance(self):
10         print("Attendance Records:")
11         for student, status in self.records.items():
12             print(f"{student}: {status}")
13
14     # Example usage
15     attendance = Attendance()
16     attendance.mark_attendance("Alice", True)
17     attendance.mark_attendance("Bob", False)
18     attendance.mark_attendance("Charlie", True)
19     attendance.display_attendance()
20
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\SPURTHI\OneDrive\Desktop\Ai Assistant Coding> python lab6task4.py
Attendance Records:
Alice: Present
Bob: Absent
Charlie: Present
PS C:\Users\SPURTHI\OneDrive\Desktop\Ai Assistant Coding>
```

## Explanation

`self.records = {}` → A dictionary to store student names and their status.

`mark_attendance()` → Adds or updates a student's attendance (default is "Present").

`display_attendance()` → Loops through the dictionary and prints each student's status.

## Task 5 Prompt

“Generate a Python program using loops and conditionals to simulate an ATM menu.”

```
lab6task5.py > atm_menu
1  # Generate a Python program using loops and conditionals to simulate an ATM menu.
2  def atm_menu():
3      balance = 1000 # initial balance
4      while True:
5          print("\n--- ATM Menu ---")
6          print("1. Check Balance")
7          print("2. Deposit Money")
8          print("3. Withdraw Money")
9          print("4. Exit")
10
11         choice = input("Enter your choice: ")
12
13         if choice == "1":
14             print(f"Your balance is: {balance}")
15         elif choice == "2":
16             amount = float(input("Enter amount to deposit: "))
17             balance += amount
18             print(f"Deposited {amount}. New balance: {balance}")
19         elif choice == "3":
20             amount = float(input("Enter amount to withdraw: "))
21             if amount <= balance:
22                 balance -= amount
23                 print(f"Withdrew {amount}. New balance: {balance}")
24             else:
25                 print("Insufficient funds!")
26         elif choice == "4":
27             print("Thank you for using the ATM. Goodbye!")
28             break
29         else:
30             print("Invalid choice. Please try again.")
31     atm_menu()
```

```
PS C:\Users\SPURTHI\OneDrive\Desktop\Ai Assistant Coding> python lab6task5.py
```

```
--- ATM Menu ---
1. Check Balance
2. Deposit Money
1. Check Balance
2. Deposit Money
3. Withdraw Money
4. Exit
Enter your choice: 1
Your balance is: 1000

--- ATM Menu ---
1. Check Balance
2. Deposit Money
3. Withdraw Money
4. Exit
Enter your choice: 2
Enter amount to deposit: 100000
Deposited 100000.0. New balance: 101000.0

--- ATM Menu ---
1. Check Balance
2. Deposit Money
3. Withdraw Money
4. Exit
Enter your choice: 3
Enter amount to withdraw: 50005
Withdrew 50005.0. New balance: 50995.0

--- ATM Menu ---
1. Check Balance
2. Deposit Money
3. Withdraw Money
4. Exit
Enter your choice: 4
Thank you for using the ATM. Goodbye!
```

```
PS C:\Users\SPURTHI\OneDrive\Desktop\Ai Assistant Coding> █
```

## Explanation

`balance = 1000` → Starts with a default balance.

`while True:` → Creates an infinite loop until the user chooses to exit.

Menu options are printed each time.

`choice = input(...)` → Reads user input.

`if choice == "1":` → Shows balance.

`elif choice == "2":` → Deposits money (adds to balance).

`elif choice == "3":` → Withdraws money (checks if sufficient funds).

`elif choice == "4":` → Breaks the loop and exits.

`else:` → Handles invalid input.