

AI Assisted Coding

Assignment-8.1

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Batch:40

Task Description #1

(Password Strength Validator – Apply AI in Security Context)

- Task: Apply AI to generate at least 3 assert test cases for `is_strong_password(password)` and implement the validator function.
- Requirements:
 - o Password must have at least 8 characters.
 - o Must include uppercase, lowercase, digit, and special character.
 - o Must not contain spaces.

Example Assert Test Cases:

```
assert is_strong_password("Abcd@123") == True  
assert is_strong_password("abcd123") == False  
assert is_strong_password("ABCD@1234") == True
```

Code:

Task Description #2

(Number Classification with Loops – Apply AI for Edge Case Handling)

- Task: Use AI to generate at least 3 assert test cases for a classify_number(n) function. Implement using loops.

- Requirements:

- o Classify numbers as Positive, Negative, or Zero.
 - o Handle invalid inputs like strings and None.
 - o Include boundary conditions (-1, 0, 1).

Example Assert Test Cases:

```
assert classify_number(10) == "Positive"
```

```
assert classify_number(-5) == "Negative"
```

```
assert classify_number(0) == "Zero"
```

Code:

```

assignment_8.py > classify_number
7     return isinstance(p,str) and len(p)>=8 and ' ' not in p and any(c.isupper() for c in p)
8
9 # TASK 2: Number Classification | Req: Classify as Positive/Negative/Zero, handle invalid
10 # assert classify_number(10)=="Positive"; assert classify_number(-5)=="Negative"; assert classify_number(0)=="Zero"
11 def classify_number(n)->str:
12     if n is None or isinstance(n,(str,bool)):return "Invalid"
13     try:num=float(n) if not isinstance(n,(int,float)) else n
14     except:return "Invalid"
15     return "Positive" if num>0 else ("Negative" if num<0 else "Zero")
16
17 # TASK 3: Anagram Checker | Req: Ignore case/spaces/punctuation, handle edge cases
18 # assert is_anagram("listen","silent")==True; assert is_anagram("hello","world")==False
19 def is_anagram(s1:str,s2:str)->bool:
20     if not isinstance(s1,str) or not isinstance(s2,str):return False
21     c1=''.join(x.lower() for x in s1 if x.isalnum())
22     c2=''.join(x.lower() for x in s2 if x.isalnum())
23     return (len(c1)==0 and len(c2)==0) or (len(c1)>0 and len(c2)>0 and sorted(c1)==sorted(c2))

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```

Enter your choice (1-7): 2
Enter a number: 3456789
Number classification: Positive

Enter your choice (1-7): 2
Enter a number: -23456
Number classification: Negative

Enter your choice (1-7): 2
Enter a number: 0000000000
Number classification: Zero

```

Task Description #3 (Anagram Checker – Apply AI for String Analysis)

- Task: Use AI to generate at least 3 assert test cases for `is_anagram(str1, str2)` and implement the function.

- Requirements:

- Ignore case, spaces, and punctuation.
- Handle edge cases (empty strings, identical words).

Example Assert Test Cases:

```
assert is_anagram("listen", "silent") == True
```

```
assert is_anagram("hello", "world") == False
```

```
assert is_anagram("Dormitory", "Dirty Room") == True
```

Code:

```
assignment_6.py > classify_number
17 # TASK 3: Anagram Checker | Req: Ignore case/spaces/punctuation, handle edge cases
18 # assert is_anagram("listen", "silent") == True; assert is_anagram("hello", "world") == False
19 def is_anagram(s1:str,s2:str)->bool:
20     if not isinstance(s1,str) or not isinstance(s2,str):return False
21     c1=''.join(x.lower() for x in s1 if x.isalnum())
22     c2=''.join(x.lower() for x in s2 if x.isalnum())
23     return (len(c1)==0 and len(c2)==0) or (len(c1)>0 and len(c2)>0 and sorted(c1)==sorted(c2))
24
25 # TASK 4: Inventory Class | Methods: add_item(name, qty), remove_item(name, qty), get_stock()
26 # inv.add_item("Pen",10); assert inv.get_stock("Pen")==10; inv.remove_item("Pen",5); assert
27 class Inventory:
28     def __init__(self):self.stock:Dict[str,int]={}
29     def add_item(self,n:str,q:int)->None:
30         if not isinstance(n,str) or not isinstance(q,int) or isinstance(q,bool):raise TypeError
31         if q<0:raise ValueError("Quantity cannot be negative")
32         self.stock[n]=self.stock.get(n,0)+q
33     def remove_item(self,n:str,q:int)->None:
34         if not n in self.stock:raise ValueError(f"Item {n} not found in stock")
35         if self.stock[n]<=q:raise ValueError(f"Cannot remove more than {self.stock[n]} units of item {n}")
36         self.stock[n]-=q
37
38     def get_stock(self,n:str)->int:
39         if not n in self.stock:raise ValueError(f"Item {n} not found in stock")
40         return self.stock[n]
41
42     def __str__(self):
43         return f"Inventory Stock: {self.stock}"
44
45     def __repr__(self):
46         return f"Inventory Stock: {self.stock}"
47
48     def __len__(self):
49         return len(self.stock)
50
51     def __iter__(self):
52         return iter(self.stock.items())
53
54     def __contains__(self, item):
55         return item in self.stock
56
57     def __eq__(self, other):
58         if not isinstance(other, Inventory):return False
59         return self.stock==other.stock
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61     def __ne__(self, other):
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63         return self.stock!=other.stock
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65     def __gt__(self, other):
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67         return self.stock>other.stock
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69     def __ge__(self, other):
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71         return self.stock>=other.stock
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73     def __lt__(self, other):
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75         return self.stock<other.stock
76
77     def __le__(self, other):
78         if not isinstance(other, Inventory):return True
79         return self.stock<=other.stock
80
81     def __add__(self, other):
82         if not isinstance(other, Inventory):raise TypeError("Can only add another Inventory object")
83         new_stock={**self.stock,**other.stock}
84         return Inventory(new_stock)
85
86     def __sub__(self, other):
87         if not isinstance(other, Inventory):raise TypeError("Can only subtract another Inventory object")
88         new_stock={k:v for k,v in self.stock.items() if k not in other.stock or self.stock[k]>other.stock[k]}
89         return Inventory(new_stock)
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99         return self
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101     def __copy__(self):
102         new_stock={k:v for k,v in self.stock.items()}
103         return Inventory(new_stock)
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105     def __deepcopy__(self, memo):
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118     def __getattribute__(self, name):
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606     def __str__(self):
607         return f"Inventory Stock: {self.stock}"
608
609     def __repr__(self):
610         return f"Inventory Stock: {self.stock}"
```

Task Description #4

(Inventory Class – Apply AI to Simulate Real- World Inventory System)

- Task: Ask AI to generate at least 3 assert-based tests for an Inventory class with stock management.
- Methods:
 - o add_item(name, quantity)
 - o remove_item(name, quantity)
 - o get_stock(name)

Example Assert Test Cases:

```
inv = Inventory()
inv.add_item("Pen", 10)
assert inv.get_stock("Pen") == 10
inv.remove_item("Pen", 5)
assert inv.get_stock("Pen") == 5
inv.add_item("Book", 3)
assert inv.get_stock("Book") == 3
```

Code:

The screenshot shows a Python code editor with a file named `assignment_8.py`. The code defines a `Inventory` class with methods for adding, removing, and checking stock levels. The `get_stock` method handles both string and integer inputs. Below the code editor is a terminal window showing the execution of the script and its output. The terminal shows the creation of an `Inventory` object, adding rice to the stock, removing rice, and checking the stock level.

```
8.py 27  class Inventory:
DDING 28      def __init__(self):self.stock:Dict[str,int]={}
1.docx 29          def add_item(self,n:str,q:int)->None:
1.docx 30              if not isinstance(n,str) or not isinstance(q,int) or isinstance(q,bool):raise TypeError("Item name must be a string and quantity must be an integer")
1.docx 31              if q<0:raise ValueError("Quantity cannot be negative")
1.docx 32                  self.stock[n]=self.stock.get(n,0)+q
1.docx 33          def remove_item(self,n:str,q:int)->None:
1.docx 34              if not isinstance(n,str) or not isinstance(q,int) or isinstance(q,bool):raise TypeError("Item name must be a string and quantity must be an integer")
1.docx 35              if q<0:raise ValueError("Quantity cannot be negative")
1.docx 36              if n not in self.stock:raise KeyError(f"Item '{n}' not found")
1.docx 37              if self.stock[n]<q:raise ValueError("Insufficient stock")
1.docx 38                  self.stock[n]-=q
1.docx 39                  if self.stock[n]==0:del self.stock[n]
1.docx 40          def get_stock(self,n:str)->int:return self.stock.get(n,0) if isinstance(n,str) else (self.stock[n] if isinstance(n,int) else sum(self.stock.values()))
1.docx 41
1.docx 42 # TASK 5: Date Validation & Formatting | Req: Validate MM/DD/YYYY, convert to YYYY-MM-DD
1.docx 43 # Insert validate and format date("10/10/2023")-->"2023-10-10"; assert validate_and_format_da
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS + × ... | C
PS C:\Users\srajan\OneDrive\Desktop\AI_assisstant_coding> & C:/Users/srajan/AppData/Local/Programs/Python/Python313/python.exe c:/Users/srajan/OneDrive/Desktop/AI_assisstant_coding/assignment_8.py
t:
Inventory Manager | Commands: add, remove, check, quit
Command: add
Item name: rice
Quantity: 32
Added 32 rice(s)
Command: remove
Item name: rice
Quantity: 21
Removed 21 rice(s)
Command: check
Item name: rice
Stock of 'rice': 11
In 15 Cell 13 Started 11:58:08 [1] Python
```

Task Description #5

(Date Validation & Formatting – Apply AI for Data Validation)

- Task: Use AI to generate at least 3 assert test cases for `validate_and_format_date(date_str)` to check and convert dates.

- Requirements:

- Validate "MM/DD/YYYY" format.
- Handle invalid dates.
- Convert valid dates to "YYYY-MM-DD".

Example Assert Test Cases:

```
assert validate_and_format_date("10/15/2023") == "2023-10-15"
```

```
assert validate_and_format_date("02/30/2023") == "Invalid Date"
```

```
assert validate_and_format_date("01/01/2024") == "2024-01-01"
```

Code:

The screenshot shows a code editor window with a dark theme. The file is named `assignment_8.py`. The code implements a function `validate_and_format_date` that takes a date string in "MM/DD/YYYY" format and returns it in "YYYY-MM-DD" format. It handles invalid dates by returning "Invalid Date". The code uses a try-except block to catch any errors from the split operation. It also includes a main menu loop for choice 5, which prints the date entered by the user.

```
assignment_8.py > classify_number
41
42 # TASK 5: Date Validation & Formatting | Req: Validate MM/DD/YYYY, convert to YYYY-MM-DD
43 # assert validate_and_format_date("10/15/2023")=="2023-10-15"; assert validate_and_format_da
44 def validate_and_format_date(d:str)->str:
45     try:
46         if not isinstance(d,str):return "Invalid Date"
47         p=d.split('/')
48         if len(p)!=3: return "Invalid Date"
49         m,da,y=int(p[0]),int(p[1]),int(p[2])
50         if m<1 or m>12 or da<1:return "Invalid Date"
51         dm=[31,29 if y%4==0 and (y%100!=0 or y%400==0) else 28,31,30,31,30,31,31,30,31,30,31
52         if da>dm[m-1]:return "Invalid Date"
53         return f"[{y:04d}]-{m:02d}-{da:02d}"
54     except: return "Invalid Date"
55
56 if __name__=="__main__":
57     print("\nLab 8: Test-Driven Development with AI\n")
58     print("*"*50)
59     print("Main Menu")
60     print("*"*50)
61     print("1. Password Validator")
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
Enter your choice (1-7): 5
Enter date (MM/DD/YYYY): 12122004
Result: Invalid Date

Enter your choice (1-7): 5
Enter date (MM/DD/YYYY): 01122026
Result: Invalid Date

Enter your choice (1-7):
```