

Test-Driven Development with AI – Generating and Working with Test Cases

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AI Assisted Coding 8_1

TASK 1:

```
Alpy > ...
1  import string
2
3  def is_strong_password(password):
4      if len(password) < 8:
5          return False
6      if " " in password:
7          return False
8
9      has_upper = False
10     has_lower = False
11     has_digit = False
12     has_special = False
13
14     for ch in password:
15         if ch.isupper():
16             has_upper = True
17         elif ch.islower():
18             has_lower = True
19         elif ch.isdigit():
20             has_digit = True
21         elif ch in string.punctuation:
22             has_special = True
23
24     return has_upper and has_lower and has_digit and has_special
```

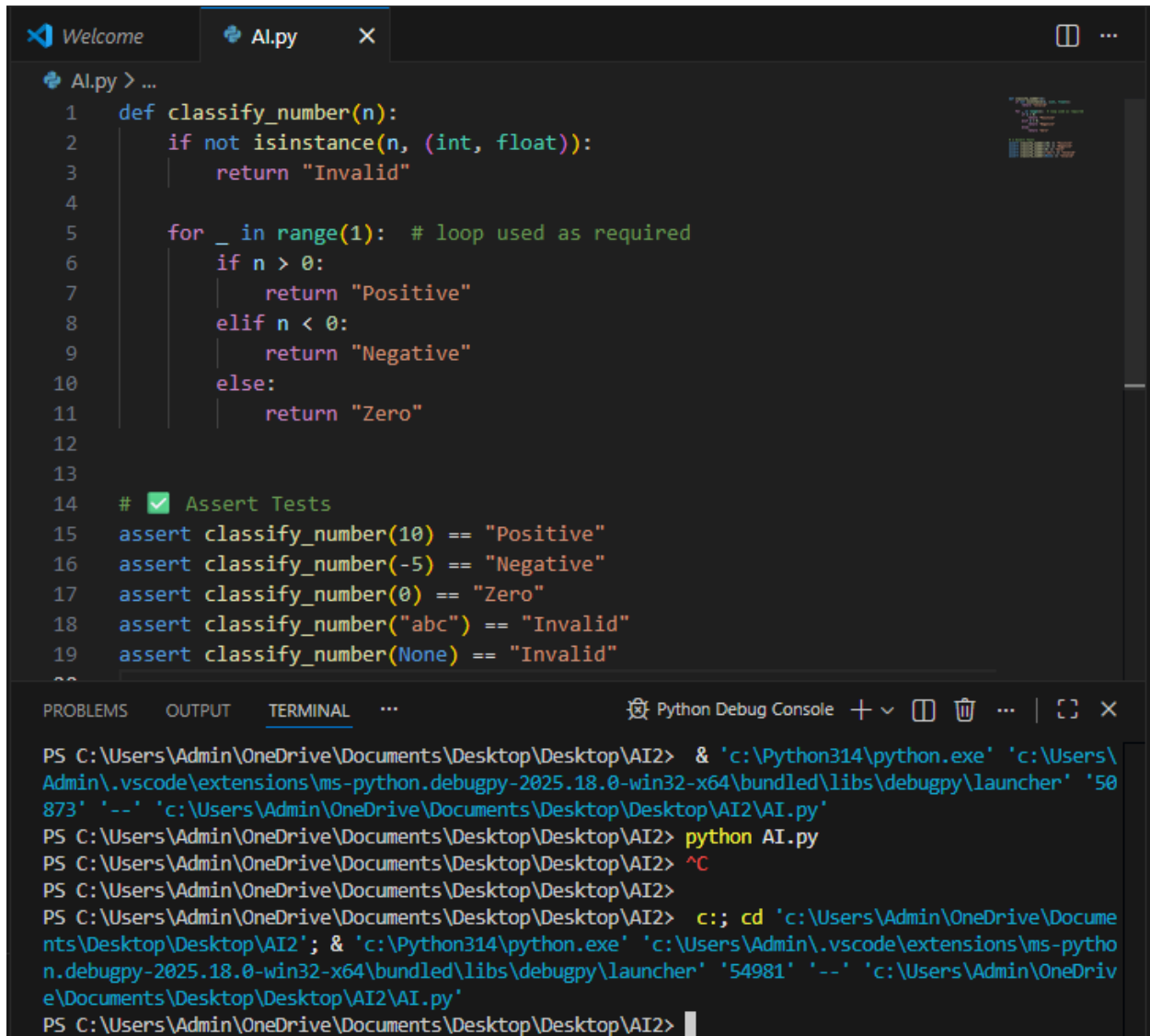
```
23
24     return has_upper and has_lower and has_digit and has_special
25
26
27 # ✅ Assert Tests
28 assert is_strong_password("Abcd@123") == True
29 assert is_strong_password("abcd123") == False
30 assert is_strong_password("ABCD@1234") == False # no lowercase
31 assert is_strong_password("Aa1@aaaa") == True
32
```

PROBLEMS OUTPUT TERMINAL ... Python Debug Console + - [] [X] ... | [] [X]

```
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2> & 'c:\Python314\python.exe' 'c:\Users\Admin\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundle\libs\debugpy\launcher' '50873' '--' 'c:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2\AI.py'
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2> python AI.py
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2>
```

Summary: Implemented a password validator ensuring minimum length, character diversity, and no spaces. All security rules tested with asserts.

Task2:



The image shows a VS Code editor window with a file named 'AI.py'. The code defines a function 'classify_number(n)' that checks if 'n' is an instance of 'int' or 'float'. If not, it returns 'Invalid'. If it is, it enters a loop (though the loop body is not fully visible in the provided code snippet). The function returns 'Positive' for positive numbers, 'Negative' for negative numbers, and 'Zero' for zero. Below the function, there are five assert tests: 'assert classify_number(10) == "Positive"', 'assert classify_number(-5) == "Negative"', 'assert classify_number(0) == "Zero"', 'assert classify_number("abc") == "Invalid"', and 'assert classify_number(None) == "Invalid"'. The terminal at the bottom shows the command 'python AI.py' being executed, and the output is 'Positive'.

```
1 def classify_number(n):
2     if not isinstance(n, (int, float)):
3         return "Invalid"
4
5     for _ in range(1): # loop used as required
6         if n > 0:
7             return "Positive"
8         elif n < 0:
9             return "Negative"
10        else:
11            return "Zero"
12
13
14 # ✅ Assert Tests
15 assert classify_number(10) == "Positive"
16 assert classify_number(-5) == "Negative"
17 assert classify_number(0) == "Zero"
18 assert classify_number("abc") == "Invalid"
19 assert classify_number(None) == "Invalid"
```

```
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2> & 'c:\Python314\python.exe' 'c:\Users\Admin\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '50873' '--' 'c:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2\AI.py'
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2> python AI.py
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2> ^C
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2>
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2> c:: cd 'c:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2'; & 'c:\Python314\python.exe' 'c:\Users\Admin\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '54981' '--' 'c:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2\AI.py'
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2>
```

Summary: Created number classifier using loops and handled invalid inputs like strings and None safely.

Task 3:

```

20 import re
21
22 def clean_string(s):
23     return re.sub(r'^[a-zA-Z]', '', s).lower()
24
25 def is_anagram(str1, str2):
26     s1 = clean_string(str1)
27     s2 = clean_string(str2)
28
29     if s1 == "" and s2 == "":
30         return True
31
32     return sorted(s1) == sorted(s2)
33
34
35 # ☒ Assert Tests
36 assert is_anagram("listen", "silent") == True
37 assert is_anagram("hello", "world") == False
38 assert is_anagram("Dormitory", "Dirty Room") == True
39 assert is_anagram("", "") == True
40 assert is_anagram("Triangle!", "Integral") == True
41
42

```

PROBLEMS

OUTPUT

TERMINAL

Python Debug Console

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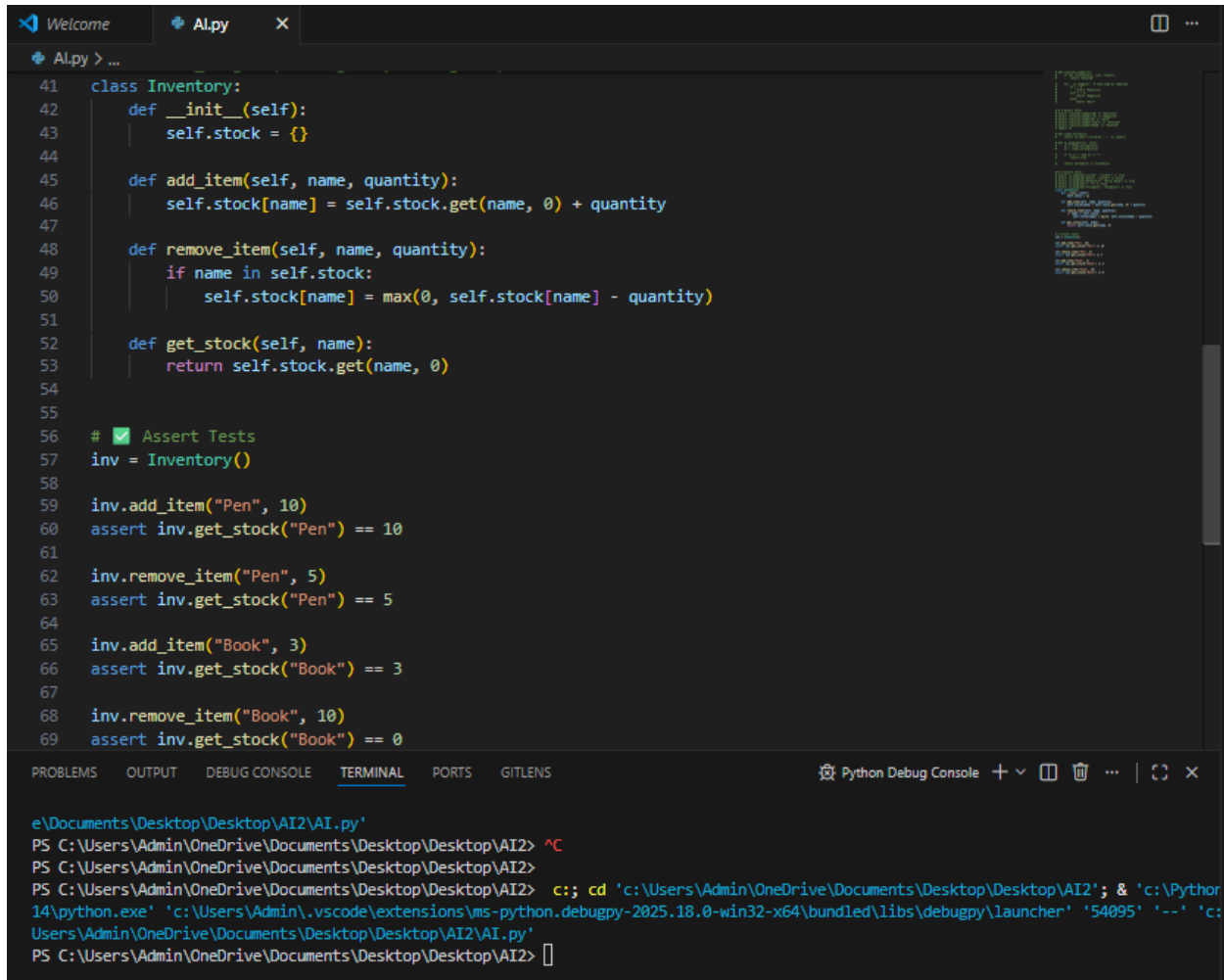
```

e\Documents\Desktop\Desktop\AI2\AI.py'
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2> ^C
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2>
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2> c:: cd 'c:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2'; & 'c:\Python314\python.exe' 'c:\Users\Admin\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '56634' '--' 'c:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2\AI.py'
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2>

```

Summary: Built an anagram checker that ignores case, spaces, and punctuation. Handles empty and special cases.

Task 4:



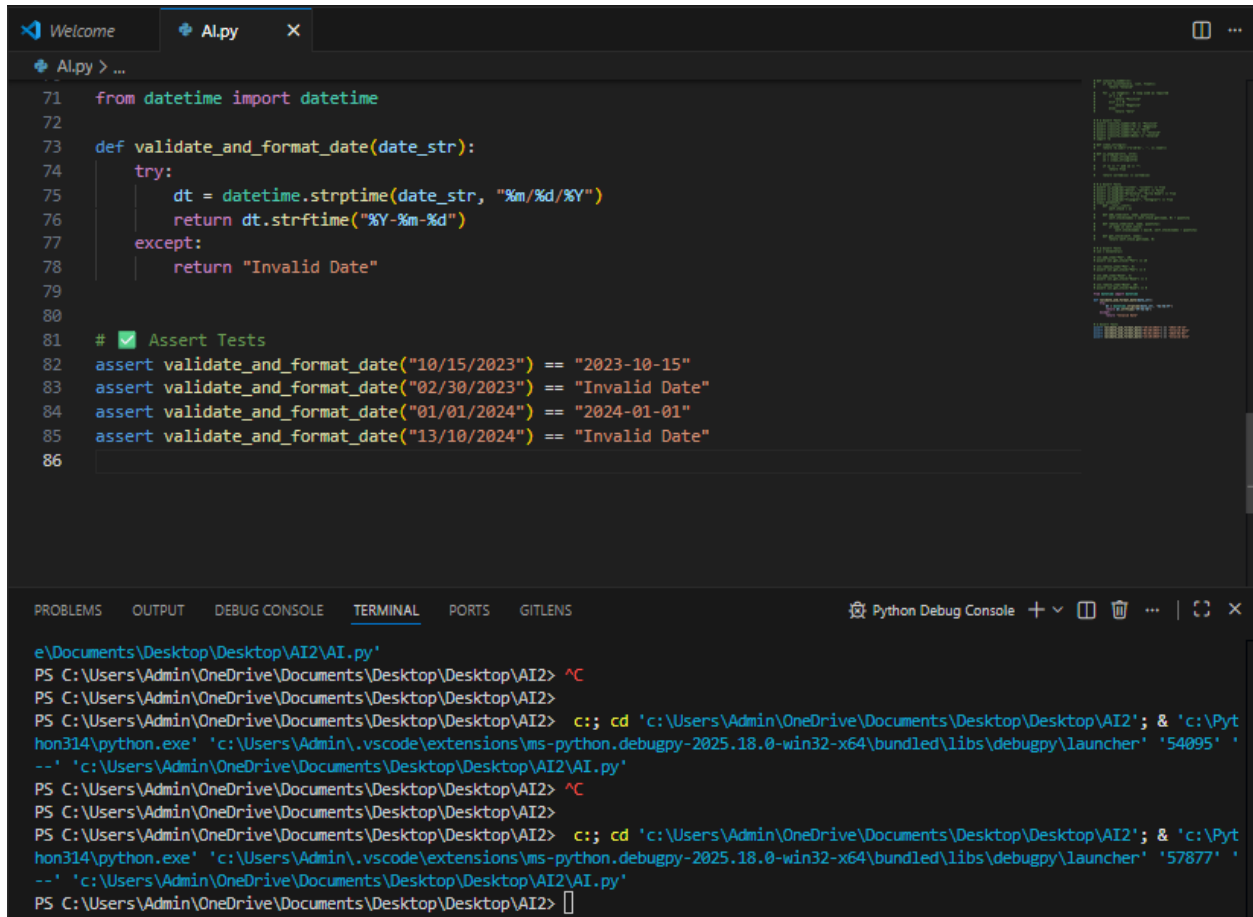
```
41 class Inventory:
42     def __init__(self):
43         self.stock = {}
44
45     def add_item(self, name, quantity):
46         self.stock[name] = self.stock.get(name, 0) + quantity
47
48     def remove_item(self, name, quantity):
49         if name in self.stock:
50             self.stock[name] = max(0, self.stock[name] - quantity)
51
52     def get_stock(self, name):
53         return self.stock.get(name, 0)
54
55
56 # [x] Assert Tests
57 inv = Inventory()
58
59 inv.add_item("Pen", 10)
60 assert inv.get_stock("Pen") == 10
61
62 inv.remove_item("Pen", 5)
63 assert inv.get_stock("Pen") == 5
64
65 inv.add_item("Book", 3)
66 assert inv.get_stock("Book") == 3
67
68 inv.remove_item("Book", 10)
69 assert inv.get_stock("Book") == 0
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS GITLENS Python Debug Console

```
e:\Documents\Desktop\Desktop\AI2\AI.py'
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2> ^C
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2>
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2> c;; cd 'c:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2'; & 'c:\Python
14\python.exe' 'c:\Users\Admin\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '54095' '--' 'c:
Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2\AI.py'
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2> 
```

Summary: Designed an Inventory class supporting add, remove, and check stock with safe quantity handling

Task 5:



The screenshot shows a VS Code editor with a Python file named `AI2\AI.py`. The code defines a function `validate_and_format_date` that takes a date string and returns it in 'YYYY-MM-DD' format if valid, or 'Invalid Date' if not. It also includes four assert tests. The terminal at the bottom shows the command to run the script, which executes successfully.

```
71 from datetime import datetime
72
73 def validate_and_format_date(date_str):
74     try:
75         dt = datetime.strptime(date_str, "%m/%d/%Y")
76         return dt.strftime("%Y-%m-%d")
77     except:
78         return "Invalid Date"
79
80
81 # ✅ Assert Tests
82 assert validate_and_format_date("10/15/2023") == "2023-10-15"
83 assert validate_and_format_date("02/30/2023") == "Invalid Date"
84 assert validate_and_format_date("01/01/2024") == "2024-01-01"
85 assert validate_and_format_date("13/10/2024") == "Invalid Date"
86
```

```
e\Documents\Desktop\Desktop\AI2\AI.py'
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2> ^C
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2>
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2> c:: cd 'c:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2'; & 'c:\Python314\python.exe' 'c:\Users\Admin\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '54095' '--' 'c:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2\AI.py'
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2> ^C
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2>
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2> c:: cd 'c:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2'; & 'c:\Python314\python.exe' 'c:\Users\Admin\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '57877' '--' 'c:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2\AI.py'
PS C:\Users\Admin\OneDrive\Documents\Desktop\Desktop\AI2> █
```

Summary: Validated dates using datetime and converted valid inputs to standard ISO format while rejecting invalid dates