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# **TU856/3 SOFTWARE TESTING**

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## **LAB 6**



**24/03/2025**

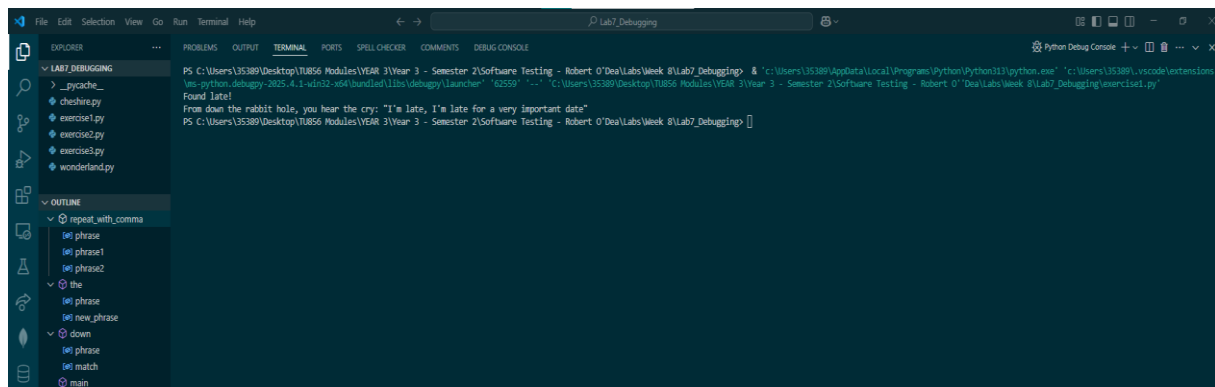
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# Debugging: Defect Reports

## exercise1.py - Debugging (Rabbit Hole)

| Observation  | Debugger Tool Used         | Outcome   |
|--|----------------------------|---|
| Set breakpoint in <code>repeat_with_comma()</code>                   | Breakpoint                 | Code paused correctly                                       |
| Skipped <code>print("Found late!")</code>                            | Run to Cursor / Change var | Avoided printing line without modifying source              |
| Traced function stack (down → the → <code>repeat_with_comma</code> ) | Call Stack                 | Visualised call structure                                   |
| Inspected & modified phrase variable                                 | Debug Console              | Changed value mid-execution (e.g., to your name)            |
| Compared Step Into vs Step Into My Code                              | Debug Navigation           | Step Into went into re module; Step Into My Code skipped it |

## Output after debugging:



## exercise2.py - Grader Program

| ID      | Defect                              | Type          | Resolution  |
|---------|-------------------------------------|---------------|---|
| EX2-001 | Unmatched closing parenthesis       | Syntax Error  | Removed the extra <code>)</code> from the line <code>input("Input exam grade two: ")).</code> |
| EX2-002 | Input not cast to integer           | Runtime Error | Changed <code>str(input(...))</code> to <code>int(input(...))</code> for all exam inputs.     |
| EX2-003 | Missing commas in list              | Syntax Error  | Added commas in the list: <code>[exam_one, exam_two, exam_three]</code> .                     |
| EX2-004 | Loop over wrong variable            | Runtime Error | Replaced <code>for grade in grade:</code> with <code>for grade in grades:</code> .            |
| EX2-005 | Incorrect variable name             | Runtime Error | Fixed typo: changed <code>grdes</code> to <code>grades</code> .                               |
| EX2-006 | Missing colons in <code>elif</code> | Syntax Error  | Added colons <code>(:)</code> at the end of each <code>elif</code> condition.                 |

|                |                                 |              |   |
|----------------|---------------------------------|--------------|---|
| <b>EX2-007</b> | Mismatched quotes               | Syntax Error | Fixed mismatched quotes on "C' → changed to "C".  |
| <b>EX2-008</b> | Invalid <code>elif</code> block | Syntax Error | Replaced incorrect <code>elif:</code> (no condition) with proper <code>else:</code> .   |
| <b>EX2-009</b> | Improper string comparison      | Logic Error  | Replaced <code>if letter-grade is "F"</code> with <code>if letter_grade == "F"</code> . |
| <b>EX2-010</b> | Invalid print syntax            | Syntax Error | Fixed Python 2 style print to use Python 3 <code>print("...")</code> .                  |

## Output after debugging:

```

PS C:\Users\35389\Desktop\TUB56 Modules\YEAR 3\Year 3 - Semester 2\Software Testing - Robert O'Dea\LabWeek 8\Lab7_Debugging> .\exercise2.py
Input exam grade one: 60
Input exam grade two: 50
Input exam grade three: 88
Exam: 60
Exam: 50
Exam: 88
Average: 66.0
Grade: D
Student is passing.
PS C:\Users\35389\Desktop\TUB56 Modules\YEAR 3\Year 3 - Semester 2\Software Testing - Robert O'Dea\LabWeek 8\Lab7_Debugging>

```

## exercise3.py - List Flattener

| ID             | Defect                                   | Type          | Resolution   |
|----------------|--|---------------|--|
| <b>EX3-001</b> | Missing return statement                 | Logic Error   | Added return output at the end of the <code>flattener()</code> function.                 |
| <b>EX3-002</b> | Shadowed built-in name <code>list</code> | Best Practice | Changed loop variable from <code>list</code> to <code>sublist</code> to avoid shadowing. |

## Output after debugging:

```

PS C:\Users\35389\Desktop\TUB56 Modules\YEAR 3\Year 3 - Semester 2\Software Testing - Robert O'Dea\LabWeek 8\Lab7_Debugging> .\exercise3.py
[[1, 2, 3, 4, 5, 6, 7],
 ['a', 'b', 'c', 'd']]
PS C:\Users\35389\Desktop\TUB56 Modules\YEAR 3\Year 3 - Semester 2\Software Testing - Robert O'Dea\LabWeek 8\Lab7_Debugging>

```

## cheshire.py - Utility File

| Observation                 | Issue | Action  |
|-----------------------------|-------|---|
| <b>No output on its own</b> | None  | Correct – this is a utility used by other files |
| <b>Correct syntax</b>       | N/A   | Code is valid and needs no changes              |

No output on its own — only called by other files.

## wonderland.py - Message Composer

| Observation                                  | Issue                   | Action   |
|--|-------------------------|--|
| Missing space in string concatenation        | Output formatting error | Fixed by adding " " before "for a very important date" |
| Calls <code>cheshire.hole()</code> correctly | ✓ Verified              | Works with <code>exercise1.py</code> as expected       |

No output on its own — integrated in `exercise1.py`.

## Final Test Outputs Summary

| File                       | Output                                 | Remarks                                    |
|----------------------------|--|--|
| <code>exercise1.py</code>  | ✓ “Found late!” + Rabbit output        | Works and debuggable                       |
| <code>exercise2.py</code>  | ✓ Grades, Average, Letter Grade        | All logic and output work as expected      |
| <code>exercise3.py</code>  | ✓ All test cases pass                  | Flattened correctly, including mixed input |
| <code>cheshire.py</code>   | ✓ Called correctly by others           | Utility function, no direct output         |
| <code>wonderland.py</code> | ✓ Works with <code>exercise1.py</code> | No errors after space fix                  |