| **Number** | **Version** | **Title** | **Credits** | **Assessment** |
| --- | --- | --- | --- | --- |
| AS91906 | 1 | Use complex programming techniques to develop a computer program | 6 | Internal |

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| **Submission Checklist (Achieved)** |

To meet the achievement level criteria it is important that your code meet the minimum expectations of the assignment. Before submitting, please complete the checklist below to ensure you have not missed anything significant in your submission.

|  |  |
| --- | --- |
| Checklist | Done? Y/N |
| My program uses variables storing at least two types of data (e.g. numeric, text, Boolean) | Y |
| My program uses sequence, selection (IF) and iteration (LOOP) control structures | Y |
| My program uses Input from a user, sensors or another external source & produced output | Yish |
| My program uses two or more complex programming techniques. | Y |
| My code is set out clearly using suitable whitespace | Y |
| I have included comments to document and explain what the code is doing | / |
| I have prepared a video recording of my program working and will submit it with this document. | N |
| I have completed the appropriate testing table(s) to show how effective my program is. | N |
| I have copied my completed code into the space provided in this document | Never |
| I have prepared a video recording of my program working and will submit it with this document. | N |

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| **About Your Project** |

In the space below, tell me anything about your program that I may need to know.

Include elements such as…

* What features did you add beyond the basic brief?
* Were there any changes to the brief that were agreed by your teacher?
* What environment is needed for your code to run?
* Etc.

In short, explain anything beyond hitting run button for a standard python environment and expecting the program to act as the example program provided.

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| Need python >= 3.11 (match statements) (tested on 3.11.3, 3.12.2)  To use debug graph, need  pip install networkx  pip install matplotlib  pip install pyqt5  pip install scipy  Program is a regular expression engine, constructing a deterministic finite automaton (a kind of state-machine) from a given regular expression. The DFA can efficiently (O(n) time) search strings. |

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| **1. Achieved Level Documentation** |

# 1.1 - 1.6

Evidenced within the code

# 1.7 Complex Tools

In the table below identify the complex tools you have used, why they have been used and where the evidence of their use can be found.

|  |  |  |
| --- | --- | --- |
| Complex Tool | Why was it used | Where is it used |
| *Student created classes/objects* | *To organise code and represent different constructs that make up the DFA structure (States (is a node) and Edges (are connections))* | *Everywhere* |
| GUI | To be able to actually see what is going on while debugging because otherwise debugging *frustrating* (I was crying while friends saw it and were like “ooo pretty picture”) bugs such as this:  (it was a simple regex it shouldn’t have exploded into that many states)  - would be entirely impossible as it would be impossible to keep track of all the states and edges in your head | debug\_graph\_viewer.py  rant:  turns out that theres a point when the code is complex enough that it does its own thing instead of what u were picturing  doesn’t help that its not deterministic because sets are unordered, and iteration order is thus random  the same result should always be achieved in the end, but the way it gets there is different each time so gl finding bugs :)  rant over |
| External libraries | Do draw the gui because I wasn’t going to draw my own guis manually and do stuff such as picking a good layout to position the states in to make the graph more comprehendable | debug\_graph\_viewer.py  uses networkx, matplotlib, scipy, pyqt5 |

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| **2.Merit Level Documentation** |

# 2.1 – Variable Names & Comments

Evidenced within code

# 2.2 - Conventions Used

Each programming language has a set of conventions that should be followed. For Python the current conventions are documented in the [PEP 8](https://www.python.org/dev/peps/pep-0008/) style guide and contain guidance such as:

* Variable and function names should all be lower case with words separated by underscores.
* Lines of code should not be longer than 79 characters
* Lines of comments should not be longer than 72 characters
* Functions should always contain a docstring

Other languages such as [C#](https://docs.godotengine.org/en/3.1/getting_started/scripting/c_sharp/c_sharp_style_guide.html) and [JavaScript](https://www.w3schools.com/js/js_conventions.asp) also have their own style guides.

In the table below identify the conventions you have followed and provide evidence that they have been applied.

|  |  |
| --- | --- |
| Selected Programming Language | Style Guide Used |
| Python | later |
| Evidence that Conventions have been applied | |
| *e.g.1 - A screen shot of the output from an online checking tool like* [**https://pep8plus.com/**](https://pep8plus.com/)*and / or* [**https://www.codewof.co.nz/style/**](https://www.codewof.co.nz/style/)  *e.g. 2 - A description of all of the conventions you have taken with examples.* | |
|  | |

**NOTE: This section is intended to demonstrate that you are aware of and have adhered to the conventions for your selected language. A screen shot alone does not demonstrate that you have been successful throughout your entire project so make sure that you thoroughly check each aspect of your work.**

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| **3.Excellence Level Documentation** |

In the table below explain how you have addressed each of the refined characteristics of the assessment and where this can be seen in your program.

|  |  |  |
| --- | --- | --- |
| Refinements | Explanation | Where is it seen |
| 3.1 The program code is efficiently and effectively organised | Yeah right lmao | Just don’t look |
| 3.2 The program has features to help manage user input | Yeah if the user does smth wrong we raise an appropriate error (remember we are API so we want to alert API user if they e.g. input invalid regex) | Mostly in RegexBuilder.PatternParseError  In regex.py |
| 3.3 The program has user friendly output | 1 - its an API it doesn’t really have output, it returns a regex object which can be used in sensible ways  2 – there is always the debug graph viewer if the user is confused | Debug output in debug\_graph\_viewer.py  Api output in class Regex in regex.py |
| 3.4 The program includes error capture features | No it has error raising features in case the user does smth weird we raise an appropriate error with a detailed error message | RegexBuilder.PatternParseError  In regex.py |
| 3.5 The program report unexpected behaviour to the user | I just told u twice already | RegexBuilder.PatternParseError  In regex.py  Again |

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| **4.Final Submission & Testing** |

# 4.1 - Your Video

Record a video showing your game in operation with valid inputs. If you wish to show any error capturing you have included in your program, record these in a separate video.

Be sure to take your time and give the viewer of this video and opportunity to fully see your game in action. Save your video recording in a suitable file format (e.g. wmv or mp4 – NOT an iSpring file)

|  |
| --- |
| Below tell us the name of this file and where it is stored. |
| It isn’t yet  Why is the font times new roman now tf |

# 4.2 – Demonstrate Authenticity

Evidenced by Teacher throughout project development & after submission

# 4.3 Valid “Expected” Input Testing (Achieved)

Valid “Expected” tests are tests that show your program operates as expected if the inputs received are as you expect them to be. For each input test that your program works using valid inputs.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test No. | Test (include test data if necessary) | Expected Result | Actual Result | Test Result |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| 4 |  |  |  |  |
| 5 |  |  |  |  |
| 6 |  |  |  |  |
| 7 |  |  |  |  |
| 8 |  |  |  |  |
| 9 |  |  |  |  |
| 10 |  |  |  |  |
| 11 |  |  |  |  |
| 12 |  |  |  |  |
| 13 |  |  |  |  |
| 14 |  |  |  |  |
| Etc. | Please add more tests as needed |  |  |  |

# 4.4 Boundary Input Testing (Merit)

Boundary tests are tests that show your program operates as expected if the inputs received are at the extreme ends of the allowed input range. It is also worth including the other side of each boundary to show that the boundaries are actually operating correctly. E.g. To test an input asking for a number between 1 and 10, apply 4 tests: 1 then 10, but also 0 and 11!

Works very well for *numerical* data, with *well-defined ordering*, however not so well for *categorical* data, such as the strings I am working with… so very limited boundaries to test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test No. | Test (include test data if necessary) | Expected Result | Actual Result | Test Result |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
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| 11 |  |  |  |  |
| 12 |  |  |  |  |
| 13 |  |  |  |  |
| 14 |  |  |  |  |
| Etc. | Please add more tests as needed |  |  |  |

# 4.5 Comprehensive Invalid Input Testing (Excellence)

**Comprehensive testing needs to show testing of all areas of the program.**

Invalid tests are tests that ensure the program operates as expected regardless of the inputs made by the user. This will be the biggest of all of the testing sections.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test No. | Test (include test data if necessary) | Expected Result | Actual Result | Test Result |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
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| 17 |  |  |  |  |
| 18 |  |  |  |  |
| 19 |  |  |  |  |
| 20 |  |  |  |  |
| Etc. | Please add more tests as needed |  |  |  |

# Your Code

Please copy the final code from your program into the space below.

|  |
| --- |
| Final Code |
| Yeah right like that will help |