INFO1110 Assignment 1

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1

1.1

1) Test cases can help clarify what the aim of a program or module is.
2) Test cases are useful when future modifications are made to certain parts of the program, as it can check whether or not the behaviour of the program has changed.
3) Determining whether or not the program responds appropriately when the user inputs something it is not supposed to.

1.2

Mocks are used primarily in unit testing when an object being tested requires other more complex objects in order to behave properly. In this case a mock replaces the complex object by mimicking its behaviour in order to run the test. [1]

Advantages

- The test for the object can be easily implemented without having to worry about having every other part of the program functioning.
- It can also provide control on what the mock object is outputting (such as forcing certain outputs from functions, having certain attribute values).

Disadvantages

- This method is only suitable for unit tests, as end to end testing would require every object to be completely functional and implemented in order to properly test the entire system.
- A lot of time and space is used when setting up mocks and determining their expectations

1.3

The crash of the Ariane 5 rocket, which was caused by an error in the program trying to represent a 64-bit float into a 16-bit integer. Due to insufficient testing, this bug was not picked up, and thus led to $370million being wasted on the crash. [2]

2

2.1

BFS is best when end point is close to start point.

Strengths

- If there is one solution, the solution with minimal steps is always found

Weaknesses

- The longer the path, the longer BFS takes.

2.2

DFS is best if the end point is very far from start

Strengths

- Faster at wide map configurations.

Weaknesses

- May not perform as well when solution is short, but map is very large

2.3

No always, as the time for DFS is more affected by the following factors,

- The order in which the DFS adds moves to the queue (i.e order of w,a,s,d,e)
- The size of the map (combination of possible routes). If the initial path it takes is very long, then it has a chance of missing the ending cell even if it is close to the start (increasing run time).

3

In this game, it is possible that certain moves need to be back-tracked in order to complete the game successfully (making a list of visited cells impractical). This is demonstrated (but not limited to) in the following example:

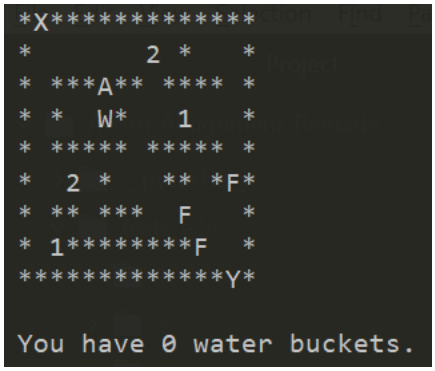

Figure 1: Before

At this position the player must go down and then go back up to pick up the water bucket in order for it to be possible to complete the level.

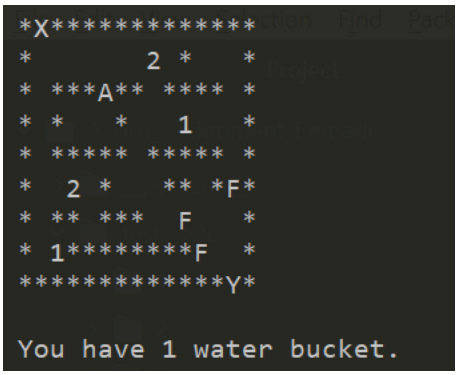

Figure 2: After

Thus after inputting ‘s’ then ‘w’, the player is back in the same position as the above figure. However, the game state is different as a bucket has been picked up. Therefore it may be necessary to revisit cells.

References

[1] M. Liversage. (2010, April) What is mocking? Accessed: 30/05/2020. [Online]. Available: https://stackoverflow.com/questions/2665812/what-is-mocking

[2] J. Lynch. (2017, September) The worst computer bugs in history: The ariane 5 disaster. Accessed: 30/05/2020. [Online]. Available: https://www.bugsnag.com/blog/bug-day-ariane-5-disaster