H446 – "Penalty Shoot Out"

Additional Commentary to Examiner

- The pen drive contains the entire game original source code as well as a testing folder with video evidence of all tests referenced in the documentation.
- **Analysis:** Target audience is identified on p3, however this really needs to be better explained. It needs to go into how they will make use of the system and then it actually needs to name at least 1 user who will be used during the project to provide feedback. Computational methods has been tackled very well on p4-7, but there needs to be at least a section which explains why this solution is amenable to a computational approach. There is some attempt to research existing solutions on p7&8, but nowhere near enough depth. Just one solution looked at, and the candidate has not pulled out and justified suitable approaches to his project based on this research. This is backed up with an interview on p10. The note at the top of p7 is meaningless as they are meant to be carrying research outside of the classroom. Features of the solution are justified and explained from p13. This is backed up on p15 with a table which explains each of the main features along with some of the limitations, and these are justified. An excellent and carefully thought through software and hardware requirements table is present on p16. Followed by a detailed requirements specification from p18. Each requirements / success criteria is fully justified and with a reference link back from the preceding research. **8/10**
- **Design:** The candidate starts their design with a top down modular design on p22. They then break down each box on the following pages and included full details of their design which includes, Screen Designs & other Digital Assets p23,24,25,27,29,30; Key Variables & Structures p31-34,57-60; Test Data for Development p43-47; Test Data for Beta Testing p49-55; Class Diagram p56. A detailed set of algorithms presented as flow diagrams are presented from p35 onwards. All test data is referenced as either Valid, Invalid or Borderline, and there are good descriptions and justifications for most elements presented in the design. P23-30 gives a nice overview of the game decision and implicitly. Additional good evidence for design is to be found in the ongoing development story. For example the explanation and justification of variables and their datatypes on p121. **13/15**
- **Iterative development of a coded solution:** Iterative development begins on p63 and takes the form of a development story in a diary format. There is clear evidence of successive prototypes being developed and the user is clearly involved at regular points for the purpose of review p79,95,104. There are excellent explanations and justifications backing up all decisions made as the solution is developed and these can be well seen. Code is seen in decent code snippets throughout the development p72,74,80,84,88,92,97,99,100,106. The code has also been provided as an appendix at the end. The code is well annotated both in the classes at the top. It has been developed in an OO and modular way. All of the variables and classes are sensibly named, which all aids in the maintainability of the solution. **14/15**
- **Testing to inform development:** There is excellent evidence of both implicit and explicit testing throughout the development process. Implicit testing can be seen whenever they hit a big in developed which are all well recorded, along with their subsequent investigations and actions taken p86,112. Explicit testing is excellent, test data identified in design is used and results recorded and justified and actions taken p70,73,75,83,85,87,89,93,98,101,106,108,110,115, 116 **10/10**
- **Testing to inform evaluation:** Detailed end user / systems testing starts on p123. Detailed tests are seen for every section along with referenced video evidence on the USB pen. Testing is robust and doesn't just test valid situations, there are plenty of borderline and invalid tests to check if the system would fail. Usability testing occurs on p135-137 in the form of an interview and also many usability features are tested in the previous test tables. **5/5**
- **Evaluation of solution:** The evaluation starts on p138. Each requirement from the start is taken in turn and a justification for it given, the candidate then discusses if each has been met and if not why not. This is detailed and goes on for 5 pages. Starting on p144 the candidate looks at maintenance and limitations. Each feature which was not implemented is taken and an justification of how it could be included in the future provided. **12/5**
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