Please fill this in with your expected mark and a summary of what you did for each category. It doesn’t need a lot of detail, but does need enough information to determine what was done and not done.

Please fill in the **Mark** column with an idea of what mark you expect, so we can easily check.

Please both submit this to moodle and provide it to your marker at the demo (by posting into the chat for the one-to-one teams meeting where you share your screen to do the demo).

Please delete all text with yellow background and replace my example comments by your own.

Name: \_\_\_\_\_\_\_\_\_Siyu Yao\_\_\_\_\_\_\_\_. Student id: \_\_20216468\_\_\_

C++ Programming, Coursework Part 2, mark sheet

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|  |  |  |
| --- | --- | --- |
| Mark | Requirement | **What you did and where it is in the code (file/lines)**  **You should fill in this boxes in this column** |
| 0-3 | **1. Handling program states**  1=startup/pause/running  2=5 states, etc  3=state pattern | I have 5 states for game “sea++”. Initial: the begin screen with how to play the game. Menu: user can see the current highscores. Play: the main game. Gameover: user died, end the game. Highscore: user died with highscore, create new highscore record.  Using design pattern to change between states (see class “CW2Engine”, “CW2GameState” and “CW2StateManager”). CW2Engine is the subclass of BaseEngine, have member CW2StateManager to know which game state should be called now. CW2GameState using subclass polymorphism which contains 7 states as it’s subclasses.  (Expects 3 marks) |
| 0-3 | **2. Save and load some non-trivial data**  1=one value save AND load  2=more complex data  3=save/load state | In CW2TileManager, I use three file to read and draw tiles according to read data. See requirement 12 details.  In MenuState read the highscore file and display them on the screen, in HighscoreState, read the old highscore file data, updata them with new record and store them in file. In PlayState, player can press S to save state, and if there is saved state can load player can press L in InitState to load the saved state. See MenuState class, HighscoreState class, PlayState calss and InitState class in CW2GameState.cpp  (Expects 3 marks) |
| 0-1 | **3. Use appropriate sub-classing with automated objects**  Intermediate class with functionality.  At least three different subclasses. | I first created CW2Object for all of my DisplayableObject. Then I created a subclass CW2Magic for player can use magic and a subclass CW2Wand for player holding. Then I created CW2Creature for all the “live” objects, which contains Player subclass for player, and Monster subclass for auto moving monsters.  (Expects 1 mark) |
| 0-2 | **4. Creating new displayable objects during operation**  1 = Created or made visible  2 = destroy properly as well | I created CW2Magic class, user can use magic, it will be destroyed once it out for range or completed checkcollisions.    (Expects 2 mark) |
| 0-4  \*  + | **5. Complex intelligence on an automated moving object**  1-2 marks then justify to the right ->  3 or 4 marks needs good documentation explanation later.  4 marks also needs video! | I created 3 Monster types, each of them can base on player’s positon to update their location, all using logic like if-else  (Expects 1 mark) |
| 0-2 | **6. Non-trivial pixel-perfect collision detection**  Improved=better than the class I gave  Complex irregular shapes is meant to be hard – to challenge the best students, e.g. check each pixel in shapes for intersection. | I don’t have enough time so only used rectangles to check collision.  (Expects 0 mark.) |
| 0-1 | **7. Implement a scrolling background by manipulating the way that the background image is drawn** | When user get Gameover state, the screen can scrolling.  (Expects 1 mark) |
| 0-1 | **8. Have an animated or changing background by utilising multiple images** | I don’t have enough time to do this sadly  (expects 0 marks) |
| 0-2 | **9. Correctly implement scrolling and zooming of the foreground, allowing the user to scroll around using keys and/or mouse**  1 mark – one of them  2 marks – both using filterpoints | I don’t have enough time to do this sadly  (expects 0 marks) |
| 0-2 | **10. Animate moving objects**  1 = 1 object, some understanding  2= all objects, smooth and impressive | I created a class called CW2AnimatedManager, it can either take one image including all frames or take one images is one frames to create animation. it is used in CW2Creature class and all its sub class, according to creature moving direction or action behaviour changing animation.  (Expects 2 mark) |
| 0-1 | **11. Image rotation/manipulation using the ImagePixelMapping object**  Your own new subclass! | I created a class called CW2ImaPixelMapping, it’s the subclass of ImagePixelMappingShiftXY and SimpleImage, use this class I’m able to render image apply both mapping and mask and do not need to load tons of images.  See CW2ImaPixelMapping, CW2TileManager, CW2AnimatedManager.  (Expects 1 mark.) |
| 0-2 | **12. Interesting and impressive tile manager usage**  5+ tile types  Appropriate/different pictures  One or more images  2 marks: impressive and changes | I created a 25\*20 tilemap using each tile of 32\*32px, all tiles are from one tilesets image. The tilemap has two layers, the 1st layer is floor and walls, and the 2nd floor is rendered with mask to add on the 1st layer. I used three csv files to store the tile image. tilesets\_32x32px.csv stored the tile ID on tilesets image. map\_layer1.csv and map\_layer2.csv stored which tile should draw on this position for 1st layer or 2nd layer. I created CW2TileManager class to load the data from file and draw the tilemap.  It use 4 vector to store tileID and according to that to draw map and check if this position creature can stand up. If player get 150 score and killed more than 10 monsters the tilemap will update to bouns map with only redraw second layer. I used more than 80 types Sigle tile to draw the map, but only loaded one image and three files it’s efficient.  (Expects 2 mark.) |
| 0-1 | **13. Allow user to enter text which appears on the graphical display** | When user end game with highscore, user can input their name on the screen and store their name and score into file. User can see their input on screen, input only allowed letters and spaces, if input wrong, user can delete last input by press delete.  See HighscoreState class in CW2GameState.cpp.  (Expects 1 mark.) |
| 0-1 | **14. Show your understanding of templates, operator overloading or smart pointers**  Used in appropriate way**.** | I crated two templates function in CW2Object, for finding objects according to their type.  See CW2Engine.h line 49-88.  I also used shared\_ptr to all my animated object..  (Expects 1 mark.) |
| 0-1 | **15. Additional complexity, pre-agreed in advance with Jason (max 1 mark).**  In general this is for advanced things which don’t fit other criteria. | (Expects 0 mark) |
| 0-3 | **16. Impact/impression/WOW factor!**  2 or 3 marks needs explanation in document.  3 marks needs a short video too. | I think I did not meet the impact factor, if I have more time would be better.  (Expects 0 mark.) |
|  |  |  |
|  | Your program crashes on exit or has a clear memory leak. (Lose 10% of your mark.) | |
|  | Your program crashes at least once during its operation. (Lose 20% of your mark.) | |
|  | Your program crashes multiple times. (Lose 30% of your mark.) | |
|  | Your program crashes frequently. (Lose 40% of your mark.) | |
|  | Your program has some odd/unexpected behaviour/errors. (Lose 10% of your mark.) | |
|  | Your program has a lot of unexpected behaviour/errors. (Lose 20% of your mark.) | |
|  | Your program crashes on exit or has a clear memory leak. (Lose 10% of your mark.) | |

# Further documentation section:

## Complex intelligence on an automated moving object

<Insert explanation here if you are going for 3 or 4 mark criteria.>

(Don’t forget to include video if you are going for 4 marks complexity.)

## Impact/impression/wow factor:

<Insert screen shots and description if you are going for 2 or 3 marks.>

(Don’t forget to include video if you are going for 3 marks ‘sellable quality’ OR you think it MAY meet those criteria.)