**Statement of language used**

Processing-java which is an object oriented language and is used to show graphical images and animations

**Naming of all necessary libraries**

Processing

**System diagram**

**Button**

-x

-y

-my\_width

-my\_height

-my\_text

-my\_textSize

-paddingX

-paddingY

-textColour

-baseColour

-hoverColour

-outline

+isMouseOver()

+render()

**Structure**

-structure

-gridX

-gridY

-my\_width

-my\_height

+update()

+place()

+getWidth()

+getHeight()

+getX()

+getY()

+get(int x, int y)

setup

setupGUI

setupMenu

clearBoard

draw

god

checkKeys

render

renderGUI

renderMenu

renderBoard

Button.render

Structure.update

Structure.get

Structure.getX

Structure.getWidth

Structure.getY

Structure.getHeight

mousePressed

Button.isMouseOver

startGame\_file

Structure.place

startGame\_glider

startGame\_gun

startGame\_random

**Full outline of each function**

|  |  |  |
| --- | --- | --- |
| Function Name | Parameters | What it does |
| setup | ------- | Sets up the background and the board. Also sets up the menu and GUI. |
| draw | ------- | Render the game and updates it |
| god | List of entities | Checks if there is a pattern, that causes an entity to be created or destroyed and change their colour to signify that. Then returns the new list |
| mousePressed | -------- | This senses when a mouse is pressed and checks if it has pressed any interactive objects |
| checkKeys | -------- | This checks if any keys have been pressed and, if any of the arrow keys have been pressed, move the screen location |
| readFromFile | Filename | This reads from a file and turns it into a 2d array that then can be used to place in later on. |
| clearBoard | -------- | This makes all the values of the board set to 0 (representing an empty cell location) |
| randomBoard | -------- | This randomises the Board |
| startGame\_random | -------- | This runs the randomBoard and starts the game |
| startGame\_gun | -------- | This starts the game with only a glider gun |
| startGame\_glider | -------- | This starts the game with only one glider |
| startGame\_file | -------- | This starts the game from a saved file |
| render | -------- | This controls all the rendering |
| renderBoard | -------- | This renders the board |
| renderGUI | -------- | This renders the GUI |
| renderMenu | -------- | This renders the menu |
| saveGame | -------- | Saves the current board to a file |
| setupMenu | -------- | Creates all the buttons for the menu |
| setupGUI | -------- | Creates all the buttons for the GUI |
| Button.isMouseOver | -------- | Returns if the mouse is over the button or not |
| Button.render | -------- | Draws the button |
| Structure.update | -------- | Updates the gridX and gridY position |
| Structure.place | -------- | Places the structure on the board at its current location |
| Structure.getWidth | -------- | Returns the width of the structure |
| Structure.getHeight | -------- | Returns the height of the structure |
| Structure.getX | -------- | Returns the gridX |
| Structure.getY | -------- | Returns the gridY |
| Structure.get | Int x, int y | Returns a particular cell in the structure |

**Sketch of User Interface**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Glider |  |  |  |  |  |  |  |  |  |
| Glider Gun |  |  |  |  |  |  |  |  |  |
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