# Mathis Bellino – 20342807

# Title

# Outline of the Problem to be Solved

**The program must:**

1. Read font information from 'SingleStrokeFont.txt' storing complete font data in memory.
2. Obtain desired text height (4-10mm) via keyboard input.
3. Read text to be drawn from a file (filename via keyboard input).
4. Process text file word by word, generating appropriate G-codes for each character.
5. Scale the movements such that letter height (excluding ascenders/descenders) matches user input .
6. Transmit G-code commands to Arduino using provided serial communication functions .
7. Handle line spacing (5mm between lines) and width constraints (100mm max) .
8. Ensure proper pen up/down states and positioning.

# Key Data Items

**Core Functions**

|  |  |  |
| --- | --- | --- |
| Name | Data type | Rationale |
| readFontChar |  |  |
| convertToGCode |  |  |
| scaleMovement |  |  |
| processWord |  |  |
| generateGCode |  |  |

**Serial Communication Functions**

|  |  |  |
| --- | --- | --- |
| Name | Data type | Rationale |
| sendGCodeCommand |  |  |
| waitForResponse |  |  |
| initializeComms |  |  |

**Serial Communication Functions**

|  |  |  |
| --- | --- | --- |
| Name | Data type | Rationale |
| initialiseRobot |  |  |
| sendCommand |  |  |
| reserRobot |  |  |

Extend table as required

# Function Declarations

*Only include functions that you will develop.*

*Example (remove before submission)*

*int TemperatureConversion( int InputTemp, float\* OutputTemp )*

*Parameters:*

*InputTemp – input temperature in degrees C*

*OutputTemp – pointer to return output temperature in degrees F*

*Return value – returns 1 if successful, 0 if failed*

# Testing Information

|  |  |  |  |
| --- | --- | --- | --- |
| Function | Test Case | Test Data | Expected Output |
|  |  |  |  |
|  |  |  |  |

*Extend table as required. Note that ‘Function’ includes main()*

# Flowchart(s)

May be included as separate pdf