# Achievement Standard

| **Number** | **Version** | **Title** | **Credits** | **Assessment** |
| --- | --- | --- | --- | --- |
| AS91896 | 1 | Use advanced programming techniques to develop a computer program | 6 | Internal |

# Assessment Criteria

| **Achievement** | **Achievement with Merit** | **Achievement with Excellence** |
| --- | --- | --- |
| Use advanced programming techniques to develop a computer program. | Use advanced programming techniques to develop an informed computer program. | Use advanced programming techniques to develop a refined computer program. |

# Achievement Level (Construct)

To meet the Achieved Level Criteria you are required to write a computer program that meets the specifications of an agreed brief which is provided to you in this document.

In addition, you need to ensure that your solution adheres to the requirements of the standard, paying particular attention to incorporate all of the required components, some of which are listed below.

* Writing code for a program that performs a specified task
* Using advanced techniques in a suitable programming language
* Set out the program code clearly and documenting the program with comments
* Test and debug the program to ensure that it works on a sample of expected cases

**How do I do this?**

Complete the Programming V1 Documentation sheet. This will get you to evidence everything that is needed to meet the Achieved Level criteria.

# Achievement with Merit Level (Develop Informed)

In addition to the achievement level requirements, you are also expected to demonstrate your ability to …

* Document the program with **appropriate names and comments that describe code function and behaviour**
* **Follow common conventions** for the chosen programming language
* Test and debug the program effectively to ensure that it works on a sample of **both expected cases and relevant boundary cases**.

**How do I do this?**

Complete the sections in the Programming V2 documentation sheets that address this criteria. This will get you to evidence everything that is needed to meet the Merit Level criteria.

# Achievement with Excellence Level (Develop Refined)

In addition to the merit level requirements you are also expected to demonstrate your ability to …

* Ensure that the program is a well-structured, logical response to the specified task
* Make the program flexible and robust
* Comprehensively test and debug the program.

**How do I do this?**

Complete the sections in the Programming V3 documentation sheets that address this criteria. This will get you to evidence everything that is needed to meet the Excellence Level criteria.

# Iterative Process?

This standard does not require you to adopt an iterative development process, but recommends that you do.

It is perfectly possible to meet the Excellence level criteria with just a single submission. However, each of the documentation sheets provided gets you to focus on particular areas that will aid in your overall achievement, so it is highly recommended that you use these.

In the event that you opt to not submit multiple iterations of this project, please take the time to ensure that your submission meets **and documents** the expectations found in these three worksheets.

# Hangman

You have been asked to create a program to simulate the game of hangman.

The program should select a random word and then the user should be able to select a letter at a time to see if the word contains it. The player wins the game if they can successfully work out the random word before a predetermined number of lives are used up.

# Basic Instructions

Your program NEEDS to:

* Select a random word from a list of available words.
* Allow the user to set the number of lives (failed guesses) allowed.
* Display place holders on the screen to indicate the number of characters in the word.
* Allow the user to enter an individual guessed letter.
* Allow the user to enter a full word to guess.
* Display correctly matched letters instead of the placeholders where letters have been matched.
* Report that the user wins if all of the letters are guessed correctly.
* Report that the user loses if they run out of lives (failed guesses).

# Advanced Options

To make the program more interesting the following additional features could be added. These are not required but may provide you with a greater opportunity to demonstrate your programming ability.

* Load the random words from an external file.
* Format the placeholders using spaces.
* Display a list of the letters already picked.
* Report to the user if they entered a letter already used.
* Allow the user to have a say in the length of the word being selected.
* Incorporate the use of a GUI.

**The screen shot samples of a possible program output is shown below, and a sample video recording of possible implementations has also been provided to you for reference.**

**NOTE : Your program does not need to look like this as long as it gets the task done. The video contains some additional elements you may wish to consider, but remember that to meet this expectations of the assignment you only need to address the Basic instructions listed above.**

Here is an example sample run of the program. Your program does NOT need to look like this

|  |  |
| --- | --- |
| Main Menu |  |
| Changing Program Parameters |  |
| Starting the Game |  |
| Guessing a correct letter |  |
| Guessing an incorrect letter |  |
| Game Progress |  |
| Winning the Game |  |
| Losing the game |  |

**IMPORTANT : It is possible to create a solution to this brief that does not meet the expectations of the standard. For your work to qualify for this standard you will need to include at least TWO of the following programming concepts in your solution.**

* **modifying data stored in collections (e.g. lists, arrays, dictionaries)**
* **storing multidimensional data in collections**
* **creating methods, functions, or procedures that use parameters and/or return values**
* **responding to events generated by a graphical user interface (GUI)**
* **using non-trivial string manipulation**
* **using additional non-core libraries.**

# Authenticity

To ensure authenticity of the work presented, part of the assessment process for this assignment will require you to explain sections of your code identified by your teacher. This will be done via an interview and will help to both demonstrate your understanding of the code as well as help justify your choices.

Please note that this process DOES NOT negate the need for effective commenting of your code, which should also be completed as if it were for a third party (someone else who does not know what you program is supposed to do).