# Task 2:

*Identify the user’s requirements for the above problem:*

The requirements for this program should be gathered in the initial stages, prior to development. Functional requirements should be first considered. Functional requirements constitute the program and how it should be structured. It consists of all the functions expected.

Functional requirements:

* The user needs their Grade displayed to them based on their score

# Task 4:

*a. Explore and tabulate five Programming languages along with the most popular  
applications of each of these languages.*

The vast array of computer programming languages empowers users to execute virtually any task computable. Each language possesses its own unique characteristics, expressed through its paradigm, syntax, and compilation or execution model. These distinct attributes influence a language's suitability for specific applications. Consequently, the selection of a programming language constitutes a crucial decision in the initial stages of software development.

Users choose a Programming Language based on a set of requirements defined in the initial stages of a project. These requirements can be multifaceted, often influenced by factors such as the user's industry, the project's scope, and its anticipated scale. Many programming languages exist for different purposes to satisfy these requirements.

Some examples of contrasting applications for the most popular programming languages today:

1:

|  |  |
| --- | --- |
| Language: | Applications: |
| Python | Scientific Computing, AI, Automation |
| **Python reigns supreme as the programming language of choice within numerous scientific disciplines.** Its extensive library ecosystem, particularly rich in Data Science and AI domains, empowers users  to tackle a remarkable breadth of problems. The intuitive syntax of Python further fuels its popularity, even extending its reach beyond traditional programmers. | |

2:

|  |  |
| --- | --- |
| Language: | Applications: |
| JavaScript | Client Side Web Development, Mobile Apps, User-Interfaces (Simplilearn, 2021) |
| **JavaScript powers the interactive and dynamic nature of modern websites.** This versatile scripting language empowers web developers to craft engaging user experiences by enabling dynamic features directly within the user's browser. JavaScript executes on the client-side, eliminating the need for constant communication with a server, and contributing to a more responsive and interactive website experience. Its ubiquitous presence, powering over 97% of websites (W3Techs, 2024), equips online businesses with a powerful tool to showcase their products and services in a captivating and interactive manner. | |

3:

|  |  |
| --- | --- |
| Language: | Applications: |
| C | Operating Systems, Kernels, Device Drivers, Application Software |
| **C, a foundational general-purpose programming language, emerged in the early 1970s.** Despite its relative maturity, C remains a cornerstone of modern computing systems. Notably, C forms the core of virtually all operating system kernels, including those used in Windows, UNIX-like systems (including Linux), and various embedded systems. In this context, C acts as a critical intermediary layer, translating high-level application programming instructions into low-level commands that the hardware can directly execute.  **Originally developed for the UNIX operating system by Dennis Ritchie,** C's influence extends beyond kernels. Historically, C served as a prevalent language for application development. However, the rise of higher-level languages with features like automatic memory management and object-oriented programming paradigms has led to a shift in preference for application development. Nevertheless, C's efficiency, control over hardware resources, and extensive library ecosystem continue to make it a valuable tool for system programming and performance-critical applications. | |

4:

|  |  |
| --- | --- |
| Language: | Applications: |
| Ruby | Web Development and Deployment, Web Scraping and Data Processing |
| Ruby's expressive syntax prioritizes developer productivity with its concise and readable structure. This focus on developer experience extends to web development, where Ruby boasts a robust ecosystem of powerful web libraries, often referred to as gems. Notably, the Rails framework streamlines web application development and deployment (webcrunch, 2024), making Ruby a top choice for building complex enterprise applications. While both Ruby and Python share strengths in web development, Ruby carves a niche in the enterprise sector, while Python reigns supreme in scientific computing and machine learning (Coursera, 2024). Highlighting its industry adoption, the ubiquitous Ruby on Rails framework powers numerous high-traffic web applications like GitHub and Twitch. | |

5:

|  |  |
| --- | --- |
| Language: | Applications: |
| C# | Web Services/Applications, Game Development, Application Software |
|  | |

b. Find an example of software used in business and report their use e.g., ATM  
machine or shopping centre pay machine. What sort of computer  
programming languages are used in such applications and who developed  
them?