

# **Team Hobby**

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# **1.Introduction**

## **1.1 Abstract**

“Hobby Project Generator ” is a web application that supports browsers that runs .NET framework 5 and the upcoming .NET 6. The application finds and recommends projects based on the users’ available tools and preferences.

## **1.3 Scope**

“Hobby Project Generator” is a web application that is intended to recommend physical projects to hobbyists based on the available tools as well as their preferences. In addition, the application serves as a place for users to post personal projects with step by step guidance for others to follow.

## **1.4 Technical requirements**

Software requirements:

- Operating System: Windows 10 64-bits, any Linux distribution 64-bits
- Web Browsers: Chrome, FireFox, Microsoft Edge

Minimum hardware requirements:

- CPU: Intel 3th Generation or AMD FX series
- 1GB RAM
- Graphics: Intel HD graphics

### **1.4.1 Operating Systems**

Operating Systems that our team use to build our web application:

+Microsoft Windows 10 Pro build 9042.11165 and 19042.1237

+Microsoft Windows 10 Home build 19043

Operating system to run our web application with normal behavior:

- + Windows 8, 10, 11 64-bits
- + Any Linux distribution 64-bits

### **1.4.2 Web browsers:**

“Hobby Project Generators” require Chrome browser version 94.0.4606.61 and latest version of Chrome as of 05/20/22

### **1.4.3 Hardware requirements:**

Minimum hardware requirements:

- CPU: Intel 3th Generation or AMD FX Series
- 1GB Ram
- Graphics: Intel HD graphic

Recommend hardware requirement:

- CPU: Intel 7th generation or AMD Zen 2 architecture
- RAM: 8GB
- Graphics: Intel HD graphic

## **1.5 Non-goal**

- We will not be supporting a mobile application to access the website

## **1.6 Future goals**

The addition of software projects along with the addition in the set of user's preferences and skill sets to accommodate software projects. The web application also recommends projects to users based on programming languages they know such as Python, C++, C, Java, ....

Product recommendation feature where users will be presented with links to third party sites to buy tools that are required for projects.

## **1.7 Assumptions and Dependencies:**

The operating system is assumed to be functional and stable.

# **2. Technology Stack**

## **2.1 C# Programming Language**

### **2.1.1 What is C#:**

C# is a multi-paradigm programming language which supports procedural, object-oriented, functional and logic paradigms. Developed by Microsoft in the early 2000 with the purpose for general use and as an improvement from C by implement features such as automatic garbage collection for memory management.

## 2.1.2 Why use C#

- Most web application is developed using C# due to its compatibility with the .NET framework developed by Microsoft which our team is using for our “Hobby Project Generator”
- Faster development time with a large library and high scaling capability
- Simpler, more productive and more suitable for high level programs compared to C or C++ in the expense of execution time.

## 2.2 ECMAScript 11+ / TypeScript 4+ Language

### 2.2.1 What is ECMA 11+ / TypeScript 4+

ECMAScript is a general purpose language designed with the intention to increase interoperability between internet applications across different web browsers. ECMAScript is also known as JavaScript language. ECMAScript is used to write server applications along with Node.js.

TypeScript is a superset of ECMAScript (JavaScript) while including optional static typing as a feature. JavaScript programs can also be run by TypeScript much like how C programs are also valid C++ programs. Used to write server and client applications along with Node.js.

### 2.2.2 Why use ECMA 11+ / Typescript4+

- Interoperability for different web applications across different browsers.
- Enhance IDE support due to static typing from TypeScript to help spot common errors through Intellisense.
- Safely refactoring and renaming files.
- TypeScript interoperability with ECMAScript allows any .js file to be renamed to “.ts” file and run through the compiler.
- ECMAScript supports backward compatibility so that JavaScript code and syntax will also run on it.

## 2.3 Backend Framework .Net 5+ / 6+

### 2.3.1 What is .Net Framework?

.Net framework is designed as a standard way to build and deploy applications in order to increase interoperability between web applications and browsers. It consists of two main parts which are Framework Class Library (FCL) and Common Language Runtime (CLR). FCL is a library that contains functionality in different languages and allows them to be used by different web applications. In addition, FCL provides UI, cryptography, database access, ... and more. .Net framework also provides memory management and handling of errors.

### **2.3.2 Why use .Net Framework?**

- Increase compatibility between old and new applications
- .Net Framework is language dependence by supporting all data types and constructs available in other languages.
- Reduce the burden of memory management for the programmer with the CLR taking care of garbage collection on the heap using a garbage collector.
- .Net framework supports languages with static typing such as languages like C, C++, C#, Java, ... as well as dynamic typing languages where the data type is inferred such as Python.

## **2.4 Data Store**

### **2.4.1 What is SQL Server 2019 Developer/Express Edition?**

SQL Server 2019 is a database management system developed by Microsoft designed to serve functionality such as sending, retrieving (query) data from a server that acts as a database. In addition, SQL Server supports relational databases which is a designed pattern to show relationships between tables as well as how different rows and columns are related.

Furthermore, SQL server supports multiple users from viewing, editing data at the same time. This is done using a solution lock to prevent race conditions from occurring and preserve data integrity. Data can be query or manipulated using SQL language.

### **2.4.3 Why use SQL server 2019 Dev/Express Edition?**

- SQL Server 2019 can be installed just by running an executable making the installation process simple and convenient.
- Has many different versions designed for different product scales such as enterprise, home use, ....
- Support data encryption using symmetric or asymmetric keys to increase security.

### **2.4.4 What is SQL Server Management Studio?**

SQL Server Management Studio is a software application with graphical user interface design to interact with the servers that run SQL. It is used to access data that is stored within the server. Configure the server as well as providing other administrating tools.

### **2.5.2 Why use SQL Server Management Studio?**

- High compatibility with SQL Server

- Ability to access data, configure server settings, administrating tools are available within SQL Server Management Studio

## **2.5 IDE**

### **2.5.1 Visual Studio Code 1.59+**

Visual studio code is a code editor designed for windows, linux, and MacOS. It is optimized for debugging and building web or cloud applications.

### **2.5.2 Why use Visual Studio Code 1.59+**

- Many plugins that support different languages such as C family codes, Java, Python, Haskell, SQL. Programmers don't have to switch between different IDEs to edit code.
- Built in version control support which is compatible with Git and Github.
- Support code completion to save time from typing whole functions, variables, class names.

### **2.5.2 Visual Studio 2019 Community Edition**

Visual studio community edition is a robust IDE designed by Microsoft. The IDE contains a code editor, debugger, compiler, and a wide array of tools to assist in software development.

## **2.6 Web Server**

### **2.6.1 What is IIS 10+?**

IIS is web server software to provide interaction and configuration with the server developed by Microsoft. IIS supports many different connection protocols including HTTP, HTTPS, SSL connection that use asymmetric encryption. IIS provides the basic functionality that is expected of a web server such as handling requests, authorization and authentication, ...

### **2.6.2 Why use IIS 10+?**

- Support .NET application
- Easy to update to install. IIS can be updated along with Windows update.

## **2.7 Web Browsers**

### **2.6.1 Chrome Internet Browser**

Chrome browser, version 94.0.460661 is required for minimal support with our application.



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About Matt WatsonMatt is the Founder & CEO of Stackify. He has been a developer/hacker for over 15 years and loves solving hard problems with code. While working in IT management he realized how much of his time was wasted trying to put out production fire. “What Is c# Used for?” *Stackify*, 24 Sept. 2020, [stackify.com/what-is-c-used-for/](https://stackify.com/what-is-c-used-for/).

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