BuildMate: PC Assembly & Upgrade Experience

Build your dream PC with ease

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| **Course** | UX Design in Web & Mobile App | CSIS-3375-004 |
| **Team Lead** | Ruon Kitahara |  |

# Introduction

## Background

Building or updating a personal computer (PC) has always been thought of as a chore best left to enthusiasts and users with technical expertise. The demand for in-depth understanding of device compatibility, power requirements, and performance benchmarks makes the process daunting for many novices. Errors like selecting an inadequate power supply or an unsuitable motherboard may rapidly result in frustration and resource loss. The majority of current resources are still technical, text-heavy, and inaccessible to the typical user, despite the rising interest in custom PCs.

## Purpose of BuildMate

BuildMate provides an interactive, visually-first environment for PC building and upgrades in order to address these issues. A virtual builder allows users to drag and drop components while getting real-time compatibility checks, performance information, and suggestions for upgrades. To improve decision-making even further, the application models results like system efficiency, rendering speeds, or predicted game performance. Users may sample how various PC cases might appear in their workstation with BuildMate's augmented reality (AR) features. The building process becomes an interesting, simple, and instructive experience thanks to this mix of characteristics.

## Significance

BuildMate's importance comes from its capacity to make PC building more accessible. The application encourages curiosity and confidence in users while empowering them to make educated decisions by lowering the technological obstacles that deter novices. BuildMate offers a hands-on, interactive method similar to constructing with LEGO bricks, in contrast to conventional websites or applications that place an emphasis on particular requirements. This helps novice builders, but it also appeals to seasoned users who want performance-based decision-making, efficiency, and visibility. In the end, BuildMate reinvents PC construction as a life-changing activity centered on empowerment, knowledge, and accessibility.

### Motto: Assemble. Learn. Upgrade.

# Background Research

## Market Competitors

1. PCPartPicker

* Provides a large database of PC components with compatibility checks (PCPartPicker, n.d.).
* However, it is text-heavy and lacks a visual, interactive building interface.
* Focuses more on listing and pricing rather than providing a hands-on building experience.

1. NZXT BLD

* An online PC building service where users choose parts and have a pre-built system　(NZXT, n.d.).
* While it reduces complexity, it removes the hands-on learning and building process.
* As a result, it is less interactive and less educational than BuildMate.

1. MSI Mystic Light / ASUS Armoury Crate (ecosystem tools)

* Apps that allow customization of RGB lighting and, in the case of Armoury Crate, hardware monitoring (MSI, n.d.; ASUS, n.d.).
* Useful post-purchase personalization but not for planning or learning.
* Unlike BuildMate, they focus only on customization after buying components.

## Market Inspirations

1. LEGO Digital Designer

* Provides a playful, drag-and-drop building experience for LEGO sets (LEGO Group, n.d.).
* Its intuitive and creative approach inspires BuildMate’s visual and interactive design philosophy.

1. IKEA Place (AR app)

* Lets users preview furniture in their home using AR (IKEA, n.d.).
* Inspires BuildMate’s AR preview feature, allowing users to visualize PC cases in real-world contexts.

1. Canva

* A design platform accessible for beginners while offering advanced tools for experts (Canva, n.d.).
* BuildMate adopts a similar philosophy: simple for novices, valuable for enthusiasts.

## Why BuildMate is Different

Unlike existing tools that are either text-heavy, oversimplified, or limited to post-purchase customization, BuildMate integrates visual drag-and-drop building, real-time compatibility checks, performance simulation, and AR previews into one unified platform. This combination creates not only a practical tool for decision-making but also an engaging, educational, and empowering experience for all levels of users.

# PACT Framework

## People

* Novices: Users with little to no technical knowledge who want to build their first PC without fear of making mistakes.
* Intermediate users: Hobbyists who have some knowledge but want a faster and more reliable way to check compatibility and performance.
* Experts/enthusiasts: Users who enjoy building PCs but want additional efficiency, visual simulations, and AR previews to optimize and experiment.

## Activities

* Selecting and assembling PC components in a drag-and-drop virtual interface.
* Receiving real-time compatibility checks
* Exploring performance simulations
* Using AR previews to visualize physical appearance of the PC in a real environment.
* Comparing and upgrading existing PC builds with tailored suggestions.

## Context

* At home: Users build and visualize PC setups from their personal devices.
* In retail stores: Customers use BuildMate to virtually assemble before purchasing parts.
* In learning environments: Students use the app to learn about hardware, compatibility, and system performance.
* Community spaces: Enthusiasts share builds, recommendations, and performance results.

## Technology

* Cross-platform (planned)
* Augmented Reality (AR) integration for visualization of PC cases and setups.
* Drag-and-drop interface optimized for intuitive user interaction.

# Value Proposition

BuildMate delivers a transformative PC-building experience by removing the steep learning curve that prevents many users from engaging with custom PC assembly. Unlike existing tools that are text-heavy or limited to static compatibility checkers, BuildMate combines visual interactivity, real-time performance simulation, and AR visualization into one unified platform.

* For novices, it transforms building a PC from a confusing technical task into a fun, guided, and educational experience.
* For enthusiasts, it streamlines research and provides data-driven optimization tools to maximize performance.
* For retailers and educators, it provides an engaging way to demonstrate hardware setups, encouraging exploration and confident purchasing decisions.

In essence, BuildMate empowers users to assemble, learn, and upgrade with confidence by transforming a once intimidating process into an accessible, enjoyable, and empowering journey.

# Project Contract

We, the undersigned, agree to the following:

* Meetings: Twice a week (in person + online via Teams).
* Communication: WhatsApp for updates.
* Documentation: Shared Word Documents + GitHub Repo.
* Team Lead Role: Coordinates submissions, ensures deadlines, communicates with the instructor.

Team Members’ Signatures:

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| --- | --- |
| Eranda Hettiarachchillage | Eranda |
| Ruon Kitahara | Ruon |

# Preliminary Features

The preliminary features of BuildMate outline the essential functionality envisioned for the prototype. These features focus on simplifying the PC building process, offering users both utility and creativity while providing opportunities for interactive engagement.

* Drag-and-drop PC component builder:

Enables users to assemble their custom PC virtually in an intuitive, visual way.

* Real-time compatibility checker:

Automatically identifies and alerts users of any mismatched or incompatible hardware components.

* Performance simulation:

Provides projections of gaming FPS, rendering speeds, and overall system performance.

* Upgrade recommendation engine:

Suggests optimal upgrades based on the user’s current build and performance goals.

* AR preview of PC case setup:

Let users virtually place their chosen PC case on their desk using augmented reality for spatial awareness.

* Community sharing:

Allows users to share, showcase, and compare their builds with friends or a wider community.

# AI Usage

This section outlines the AI tools used to support the development of the BuildMate prototype. It shows the specific purpose of each tool and highlights how the team added value beyond the AI outputs.

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| AI Tool Name | Version, Account Type | Specific feature for which the AI tool was used |
| ChatGPT | GPT-5 / Free | Brainstorming novel app ideas,  Drafting key proposal sections, refining wording for grammar and clarity. |

## Value Addition

While AI tools assisted in brainstorming ideas, drafting text, and generating design suggestions, all outputs were carefully reviewed, refined, and customized by the team. The team ensured that all content aligned with course requirements, project objectives, and user needs. Additionally, technical details, research analysis, and contextual explanations were incorporated by the team to ensure accuracy, creativity, and educational value beyond the AI-generated suggestions.

# Work Date/Hours

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| --- | --- | --- |
| Student: Eranda | | |
| Date | Number of Hours | Description |
| Sep 25, 2025 | 0.5 | Discuss project ideas with instructor |
| Sep 28, 2025 | 0.1 | Select a project idea with team |
| Oct 03, 2025 | 2 | Start writing project proposal |
| Oct 04, 2025 | 3 | Continue with proposal and created Git repo |
| Oct 05, 2025 | 2 | Complete proposal and compile all content and docs. |

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| Student: Ruon | | |
| Date | Number of Hours | Description |
| Sep 25, 2025 | 0.5 | Discuss project ideas with instructor |
| Sep 28, 2025 | 0.1 | Select a project idea with team |
| Oct 03, 2025 | 2 | Start writing project proposal |
| Oct 04, 2025 | 2 | Write PACT Framework and Value Proposition |
| Oct 05, 2025 | 4 | Write Background Research and review the entire Project Proposal to ensure completeness, accuracy, and readiness for submission. |

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# Appendix

## Prompt History

A screenshot of a computer

AI-generated content may be incorrect.

A screenshot of a black screen

AI-generated content may be incorrect.

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A screenshot of a computer

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