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DATABASE MANAGEMENT SYSTEMS (DBMS)

PROJECT REPORT on

Build-A-PC

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Introduction

1. Problem Statement

Building a custom PC is a complex and error-prone process due to the overwhelming variety of available components and the need to ensure compatibility among them. Users are forced to visit multiple vendor websites, research technical specifications, and manually cross-check compatibility between CPUs, motherboards, RAM, GPUs, and power supplies. This fragmented workflow consumes significant time, increases the likelihood of mistakes, and may lead to costly purchases of incompatible parts.

2. Short Description

The proposed project aims to develop a centralized database-driven application designed to simplify and optimize the process of building custom PCs. Currently, users face the challenge of navigating multiple vendor websites, researching individual part specifications, and manually checking compatibility, which is both time-consuming and error-prone. This application will consolidate a large catalog of PC components with detailed specifications into a single platform, eliminating the need for scattered research.

The system will feature intelligent search and filtering capabilities, allowing users to quickly locate the exact components they need. It will also provide automatic compatibility validation across parts such as CPUs, motherboards, RAM, GPUs, storage devices, and power supplies, ensuring that only feasible and error-free configurations are suggested. Additionally, the platform will generate build summaries, calculate estimated power requirements, and provide helpful recommendations, making the process seamless even for users with limited technical knowledge.

By integrating part selection, compatibility checking, and data storage into one unified solution, this application will streamline the PC-building process, minimize the risk of purchasing incompatible components, and deliver a faster, more reliable, and user-friendly experience for both beginners and advanced PC builders.

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User Requirements Specification

Purpose:

The purpose of this system is to simplify the process of building custom PCs by consolidating PC part information into a centralized platform and automatically checking compatibility between components.

Scope:

The application will allow users to search, filter, and select PC parts, view detailed specifications, and validate compatibility across all chosen components. It will reduce errors, save time, and provide a seamless user experience for beginners and advanced PC builders alike.

1. Functional requirements

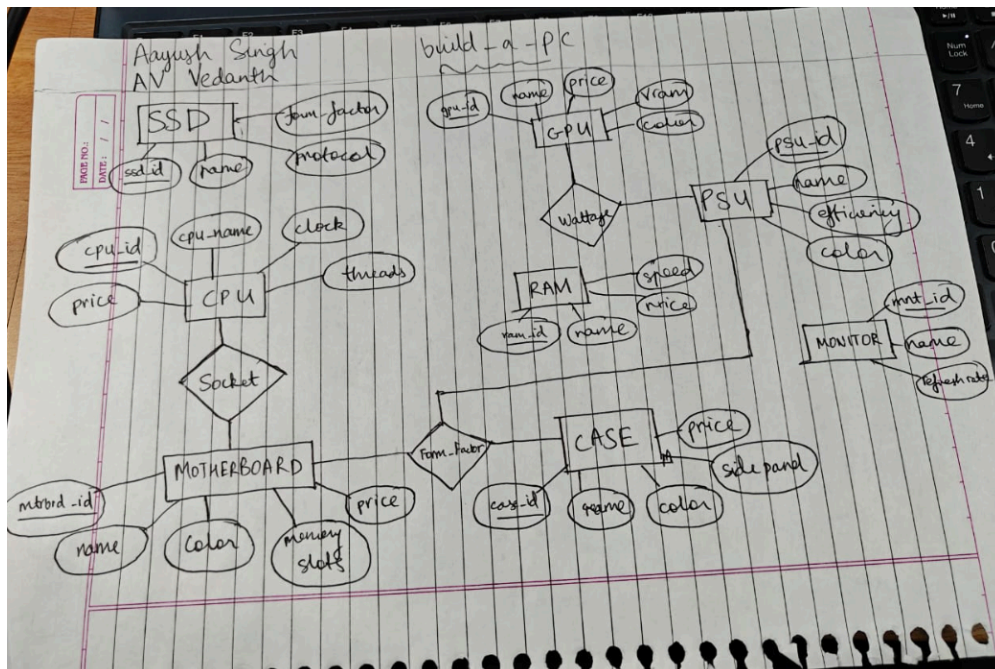
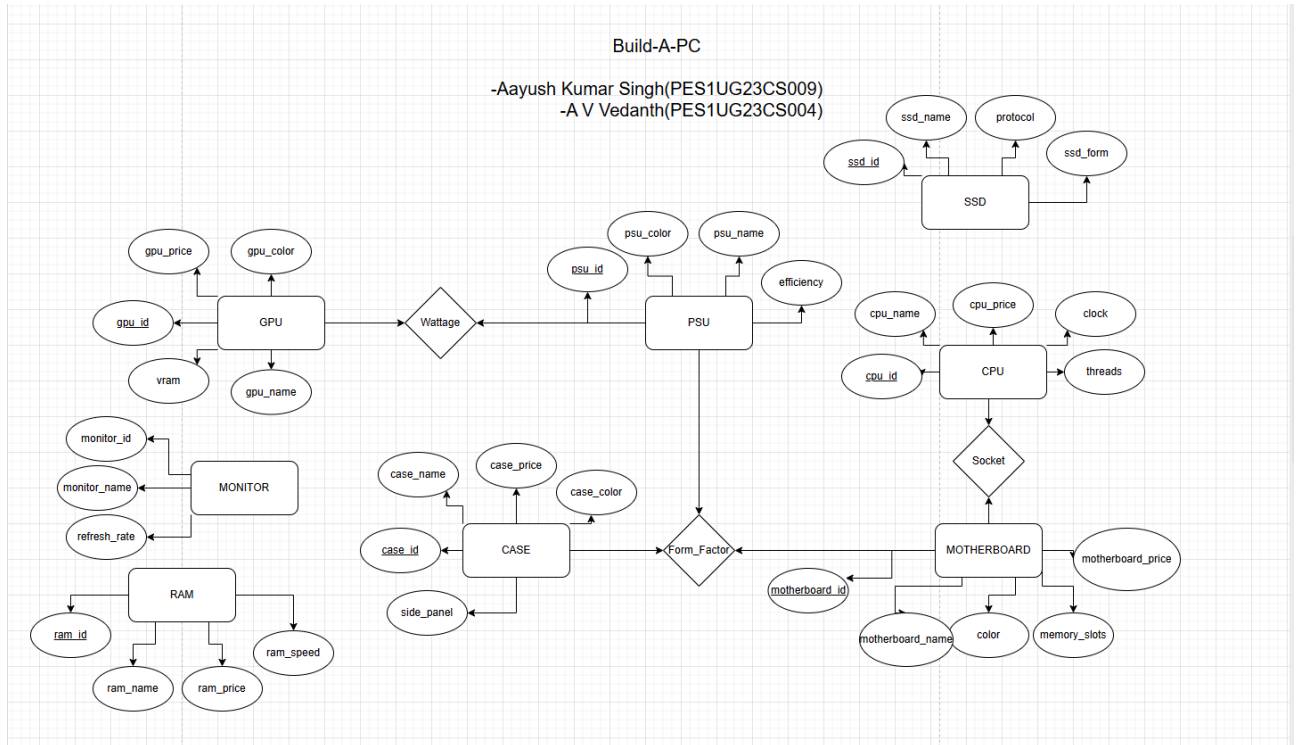
ID	Requirement	Details
FR 1	Search & Filter Parts	Users can search and filter PC parts by category (CPU, GPU, RAM, Motherboard, PSU, Storage, etc.).
FR 2	View Specifications	Detailed specifications (e.g., socket type, memory speed, power usage) displayed for each component.
FR 3	Compatibility Check	Automatic validation between selected parts (CPU ↔ Motherboard socket, RAM ↔ Motherboard, GPU ↔ Case, etc.).
FR 4	Incompatibility Warnings	Users are notified with clear warnings when incompatible components are selected.
FR 5	Save & Review Builds	Users can save, edit, and revisit custom PC builds.
FR 6	Part Comparison	Compare specifications of multiple parts within the same category.
FR 7	Power Estimation	The system calculates total power consumption and recommends PSU wattage.
FR 8	Build Summary	Generates a final build summary with selected parts, specs, and pricing.

2. Non-functional requirements

ID	Requirement	Details
NFR1	User-Friendly Interface	Intuitive and simple UI for beginners and advanced users.
NFR2	Performance	Fast search and compatibility check responses.
NFR3	Data Accuracy	Specifications are reliable and up to date.
NFR4	Scalability	New parts and vendors can be easily integrated.
NFR5	Accessibility	Works on both desktop and mobile devices.
NFR6	Reliability	High availability with minimal downtime.

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E-R Model



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Relational Model

- Schema Diagram

