

PC PART PICKER

Software Test Plan

Document Change History

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1 Introduction

This test approach document describes the appropriate strategies, process, workflows and methodologies used to plan, organize, execute and manage testing of PC Part Picker website.

1.1 Overview

PC Part Picker is a comprehensive online platform designed to assist users in building custom desktop computers tailored to their specific needs and preferences. It serves as a one-stop destination for both novice and experienced PC enthusiasts, offering a plethora of tools and resources to simplify the process of selecting compatible hardware components and assembling them into a cohesive system.

Key Functionalities:

- **Component Catalog:** Browse through a vast catalog of computer parts from various manufacturers, including CPUs, GPUs, motherboards, RAM, storage drives, power supplies, cases, and more.
- **Comparison Tools:** Compare specifications, prices, and user reviews to make informed decisions about which components best suit your requirements.
- **Compatibility Checking:** Automatically verify that selected components are compatible with each other, helping users avoid potential pitfalls such as mismatched socket types, incompatible form factors, or insufficient power supply wattage.
- **Estimation Tools:** Estimate power consumption, generate part lists, and share build configurations with others for feedback and advice.
- **Community Engagement:** Engage with an active community of users and contributors, sharing build ideas, troubleshooting issues, and providing guidance to fellow PC builders.

With its intuitive interface, robust feature set, and active community of users and contributors, PC Part Picker has become an invaluable resource for PC builders worldwide.

1.2 Scope

The test approach for the PC Part Picker website encompasses the evaluation of its functionality, performance, security, and user experience.

1.2.1 In Scope

The scope of testing for the PC Part Picker website includes:

- Testing all functional requirements as outlined in the PC Part Picker functional specifications document.
- Evaluation of application performance to ensure optimal user experience under various load conditions.
- Security testing to identify and address potential vulnerabilities in the system.
- Testing of all identified use cases to verify system behavior.
- Assessment of quality requirements and fit metrics specific to the PC Part Picker system.

- End-to-end testing to ensure seamless integration of all system components.
- Testing of interfaces with external systems or APIs that interact with the PC Part Picker website.

1.2.2 Out of Scope

The following aspects are considered out of scope for the PC Part Picker website:

- Functional testing of systems external to the PC Part Picker website.
- Testing of Business Standard Operating Procedures (SOPs), disaster recovery procedures, and Business Continuity Plans (BCPs).

1.3 Quality Objective

1.3.1 Primary Objective

The primary objective of testing the PC Part Picker website is to ensure that the system meets all specified requirements, including functional and non-functional requirements, and adheres to defined quality metrics. This encompasses:

- Verification that the system fulfills all functional requirements outlined in the requirements document.
- Evaluation of non-functional requirements such as performance, security, and usability to ensure they are met.
- Validation of the system's ability to satisfy use case scenarios as defined in the Functional Specification.
- Maintenance of product quality throughout the project development cycle.
- Ultimately, the aim is for users to perceive that the PC Part Picker website has not only met but possibly exceeded their expectations as detailed in the requirements.

Any modifications, additions, or removals to the requirements document, Functional Specification, or Design Specification will be duly documented and tested with the highest level of quality achievable within the remaining project timeline and the capacity of the test team.

1.3.2 Secondary Objective

The secondary objective of testing the PC Part Picker website is to systematically identify and expose all issues and associated risks within the system. This involves:

- Thorough testing to scrutinize all areas of the application and uncover any potential issues or bugs.
- Effective communication of all identified issues to the project team in a timely manner.
- Ensuring that all identified issues are addressed and resolved appropriately before the release of the product.

This secondary objective emphasizes the importance of meticulous testing and comprehensive issue resolution to enhance the overall quality and reliability of the PC Part Picker website before it is made available to users.

2 Test Tree

2.1 Functional Tests

Functional tests validate the behavior of the PC Part Picker website's features and functionalities. These tests cover various aspects on different components such as:

2.1.1 Login Page

2.1.1.1 Valid Login

- Login with valid username and password
- Login using third-party integration

2.1.1.2 Invalid Login

- Login using nonexistent email
- Login using existing email and wrong password

2.1.1.3 Restore password

2.1.2 Registration Page

2.1.2.1 Valid Registration

2.1.2.2 Invalid Registration:

- Registration with already registered email
- Registration with already registered username
- Registration with invalid email
- Registration with invalid password
- Registration with invalid username
- Registration without checking TOS
- Registration without checking UCOC
- Registration with not matching email
- Registration with not matching password

2.1.3 Search Functionality:

- Search using valid keywords
- Search using a valid product name
- Search using a valid product ID
- Search using a valid category name
- Search using invalid keywords
- Search empty space

2.1.4 Sorting Functionality

- Sorting by price descending order
- Sorting by price increasing order

2.1.5 Filters Functionality

- Filter using price Slider
- Filter by manufacturer
- Filter by Rating
- Filter by using product page specific filters.

2.1.6 Building Pc Section

- Choosing, changing, and removing CPU
- Choosing, changing, and removing GPU
- Choosing, changing, and removing RAM
- Choosing, changing, and removing Power Supply
- Choosing, changing, and removing SSD & HDD
- Choosing, changing, and removing CPU FANS
- Choosing, changing, and removing Case
- Changing parts of a pre-built PC

2.1.7 End to End

- Build a Pc and save the build using the Permalink

2.2 Non-Functional Tests

Non-functional tests focus on aspects such as performance, compatibility, localization, globalization, and recovery.

2.2.1 Check compatibility in PC Building Section

- Check the compatibility of the built PC Parts
- Check the compatibility between CPU & motherboard
- Check the compatibility between GPU & power supply
- Check the compatibility between GPU & Case
- Check the compatibility between RAM & motherboard

2.2.2 Compatibility Different browsers

- compatible with Google Chrome
- compatible with Microsoft Edge
- compatible with Safari
- compatible with Mozilla Firefox

2.2.3 Performance testing

- testing the system with 10000 users
- testing the system with more than 10000 users
- testing the system with overloaded database

2.2.4 Localization and Globalization

- changing the Website's Language

2.2.5 Recovery Testing

- Reload the page and check user is still connected
- Reload the page and selected part in pc section are saved

3 Entry and Exit Criteria

3.1 Entry Criteria

- passing the sanity tests
- The requirement document should be available.
- Complete understanding of the application flow is required.
- The Test Plan Document should be ready.
- Test case/scripts are available
- Test environment is ready

3.2 Exit Criteria

- No critical test fail
- No high test fail
- No more than 3 medium test fail
- No more than 5 Low test fail
- The software meets all functional and non-functional requirements
- Approval from all relevant Product Manager has been obtained
- All defects and issues identified during testing have been resolved
- Documentation is complete and up-to-date

4 Roles and Responsibilities

During the testing phase of the PC Part Picker website, various roles and responsibilities are assigned to ensure effective execution and management of the testing process. These roles are defined as follows:

4.1 QA Testers

The QA Testers are responsible for ensuring the quality and reliability of the PC Part Picker website through meticulous testing. Their responsibilities include:

- Developing test cases and organizing them into test suites as outlined in the Software Test Design (STD) document.
- Reporting any identified bugs or issues in the system to facilitate resolution.
- Conducting regression testing to ensure that recent code changes have not adversely affected existing functionality.

4.2 Test Manager

The Test Manager oversees the testing process and provides technical support to the testing team to ensure successful execution of testing activities. Their responsibilities include:

- Managing the testing efforts and ensuring adherence to timelines and quality standards.
- Reviewing the Software Test Plan and test cases to ensure they align with project objectives and requirements outlined in the STD document.

4.3 Test Lead

The Test Lead takes a leadership role in planning and executing the testing activities for the PC Part Picker website. Their responsibilities include:

- Preparing the Software Test Plan to outline the testing approach and strategies.
- Analyzing requirements during the requirements analysis phase to ensure comprehensive test coverage.
- Evaluating exit criteria to determine when testing activities can be concluded.
- Compiling and presenting the Test Summary Report to document testing results and findings.

5 Test Methodology

5.1 Validation and Defect Management

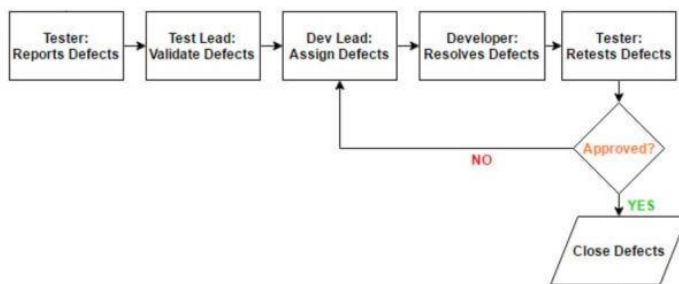
Defects found during the Testing will be categorized according to the bug-reporting tool “Jira” and the categories are:

Severity	Description
Critical	Bugs has the potential to crash the system
High	Bug significantly impacts program functionality
Medium	Bug prevents testing in specific areas of the product.
Low	Bug has minimal impact on product use .

Priority	Description
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Critical	Bug needs immediate attention due to its severe impact.
High	Bug should be addressed promptly to restore functionality
Medium	Bug requires attention but can be managed within schedule .
Low	Bug can be deferred as it has minimal impact on workflow .

5.2 Defect tracking & Reporting



5.3 Status of the Bug/Fault

- New: Just created bug
- Open: Opened bug and still not solved
- Rejected: Dev Lead rejected it (it's not bug)
- Fixed: SOLVED bug
- Closed: After bug is fixed, need close this bug
- Re-Open: Bug has been fixed and closed but appear again.

5.4 Test Management Process

	Tool	Comments
Test Management	Test Tail	Test Cases Design
Bug Tracking	Jira	Report bugs

5.4.1 Assumptions for Test Execution

During the test execution phase of the PC Part Picker website project, certain conditions must be met to ensure successful progress. These assumptions serve as the foundation for the

testing process and provide a framework for execution. Below are some minimum assumptions along with additional explanations tailored to the project:

- For User Acceptance testing, the Developer team has completed unit, system, and integration testing and met all the requirements (including quality requirements) based on the Requirement Traceability Matrix.
Prior to User Acceptance testing, all functional and non-functional requirements outlined in the Requirement Traceability Matrix have been satisfactorily addressed and verified by the Developer team.
- User Acceptance testing will be conducted by End-users.
End-users, representing stakeholders and intended users of the PC Part Picker website, will actively participate in the User Acceptance testing phase to validate the system against their needs and expectations.
- Test results will be reported on a daily basis using TestRail. Failed scripts and defect lists from TestRail with evidence will be sent directly to Developers.
Test results, including both successful and failed test cases, will be documented and communicated daily via TestRail. Any identified defects will be reported with supporting evidence and forwarded directly to the Developers for resolution.
- Use cases have been developed by Adopters for User Acceptance testing. Use cases are approved by the Test Lead. Adopters have created comprehensive use cases to guide User Acceptance testing activities. These use cases have been reviewed and approved by the Test Lead to ensure alignment with project objectives and requirements.
- Test scripts are developed and approved.
Meticulously developed test scripts outlining testing procedures and scenarios have undergone review and approval to ensure accuracy and effectiveness in validating system functionality.
- The Test Team will support and provide appropriate guidance to Adopters and Developers to conduct testing.
- The Test Team will actively engage with Adopters and Developers to provide necessary support and guidance throughout the testing process, ensuring smooth execution and timely resolution of any issues that arise.
- Major dependencies should be reported immediately after the testing kickoff meeting. Any significant dependencies or constraints that may impact the testing process or schedule will be promptly identified and communicated following the testing kickoff meeting to facilitate proactive management and mitigation.

5.4.2 Risks

#	Risk	Impact	Trigger	Mitigation plan
1	Inadequate or unclear requirements.	High	can lead to incomplete test coverage.	Collaborate closely with Product managers to ensure comprehensive and clear requirements. Conduct regular reviews and validations.

2	Insufficient testing resources (human, hardware, or software).	Medium	may lead to incomplete testing.	Plan resource needs in advance, prioritize testing tasks, and consider automation to optimize resource usage.
3	Testing in an environment that does not replicate the production environment.	High	lead to false positives or negatives.	ensure the test environment mirrors the production environment as closely as possible.
4	Poor communication among team members and Product Manager	medium	leading to ineffective testing.	Establish clear communication channels, conduct regular meetings, and document all communications to ensure everyone is on the same page.
5	Inadequate or unrealistic test data	medium	result in incomplete testing scenarios.	Develop a comprehensive test data strategy

5.5 Test Enviroments

During the testing phase of the PC Part Picker website, multiple test environments are utilized to facilitate thorough evaluation of the system across various configurations. These environments are meticulously set up to mimic the production environment as closely as possible while providing the necessary flexibility for testing activities. The following test environments are utilized:

- Operating System: Windows 11 OS Build 22631.3085
- Browser 1: Google Chrome Version 121.0.6167.140
 - All Extension are disabled
 - Cookies are allowed
- Browser 2: Firefox Version V 122.0
 - All Extension are disabled
 - Cookies are allowed
- Browser 3: Microsoft Edge Version 121.0.2277.98
 - All Extension are disabled
 - Cookies are allowed
- Python 3.12
- Selenium 4.18.1
- Selenium server 4.17.0

6 Test Artifacts

During the testing lifecycle of the PC Part Picker website project, various artifacts are produced to support the testing process, ensure validation of requirements, and maintain quality. These artifacts are process-driven and are essential for documenting testing activities and outcomes. The following list outlines the key test artifacts that should be routinely updated throughout the project development cycle:

1. **Software Test Plan (STP):**
Provides an overview of the testing approach, strategies, scope, resources, and schedule for the PC Part Picker website project.
2. **Requirement Traceability Matrix (RTM):**
Maps test cases back to specific requirements, ensuring comprehensive coverage and validation of all project requirements.
3. **Test Cases:**
Detailed instructions for executing tests to verify specific functionalities or features of the PC Part Picker website.
4. **Test Scripts:**
Automated scripts for executing repetitive or complex test scenarios to streamline testing efforts.
5. **Test Environment Configuration:**
Files detailing the configuration of each test environment, including browser settings.
6. **Test Results:**
Documentation of test outcomes, including both successful and failed test cases, along with any defects or issues encountered.
7. **Software Test Report (STR):**
Summary of testing activities, including key findings, test coverage, defect metrics, and recommendations for further action.

These test artifacts play a crucial role in ensuring the quality and reliability of the PC Part Picker website by providing comprehensive documentation of testing activities, outcomes, and recommendations for improvement. Regular updates and reviews of these artifacts are essential to maintain alignment with project objectives and requirements throughout the development cycle.

7 Time Table

Task	Start Date	End Date	Comments
STP Document	24.2.2024	25.2.2024	
STD Document	25.2.2024	26.2.2024	
Test Cases Writing	26.2.2024	1.3.2024	
STR Document	1.3.2024	2.3.2024	

8 Glossary

- Socket: A physical connector on a motherboard that allows a CPU to be installed. Different CPUs require different socket types.
- LGA 1700 (Socket LGA 1700): The latest CPU socket design developed by Intel for their 12th generation Alder Lake processors.
- AM5 (Socket AM5): The latest CPU socket design developed by AMD for their Ryzen processors.
- RAM (Random Access Memory): Computer memory that allows data to be accessed randomly, used by the CPU to store and quickly access data.
- DDR5 (Double Data Rate 5): The latest generation of RAM technology, offering higher data transfer rates and improved efficiency.
- GPU (Graphics Processing Unit): A specialized electronic circuit responsible for rendering graphics in computer games, video editing software, etc.
- Motherboards:
 - ATX (Advanced Technology eXtended) Motherboard: A form factor specification for motherboards and computer cases developed by Intel, offering more expansion slots and ports.
 - M-ATX (MicroATX) Motherboard: A smaller form factor specification for motherboards compared to ATX, suitable for compact desktop computers.
 - Mini-ITX Motherboard: A small form factor specification for motherboards, designed to fit into compact computer cases while offering a wide range of features and functionality.