**Approach:**

**To ensure the quality of the components, we can perform testing based on the following criteria**:

**Functional testing:** To check if the component is working as expected.

**Compatibility testing:** To check if the component is compatible with other components in the system.

**Performance testing:** To check if the component is meeting the performance requirements.

**Stress testing:** To check if the component can handle heavy loads and stress.

**Case 1:**

In this case, we assume that the store has already cooperated with the manufacturers of all the components that arrived before, and there were no problems with performance. However, all the models that arrived are new. Therefore, we will perform the following tests:

1. Functionality Tests: Check if all components are functioning correctly and if there are no visible defects or damages.

2. Stress Test: Check if the components can handle high workloads without overheating or malfunctioning.

CPU1, CPU2, CPU3: 2 tests each (functionality and stress testing)

MB1, MB2, MB3: 2 tests each (functionality and stress testing)

RAM1, RAM2: 2 tests each (functionality and stress testing)

SSD1, SSD2: 2 tests each (functionality and stress testing)

GA1, GA2: 2 tests each (functionality and stress testing)

**Together: 24 tests**

3. Compatibility Test: Test if all the components can work well together without any compatibility issues. We will use pairwise testing because it is an effective approach to software testing. It reduces the number of test cases required, increases test coverage, improves defect detection, and improves software quality.

| № | **Processor models** | **Motherboards** | **Random Access Memory** | **Hard drives** | **Video cards** |
| --- | --- | --- | --- | --- | --- |
| 1. | CPU1 | MB3 | RAM1 | SSD1 | GA1 |
| 2. | CPU2 | MB2 | RAM1 | SSD2 | GA1 |
| 3. | CPU2 | MB3 | RAM2 | SSD1 | GA2 |
| 4. | CPU2 | MB1 | RAM2 | SSD1 | GA2 |
| 5. | CPU3 | MB3 | RAM1 | SSD1 | GA1 |
| 6. | CPU3 | MB1 | RAM2 | SSD2 | GA2 |
| 7. | CPU3 | MB1 | RAM1 | SSD1 | GA1 |
| 8. | CPU3 | MB2 | RAM2 | SSD2 | GA2 |
| 9. | CPU1 | MB1 | RAM1 | SSD2 | GA1 |
| 10. | CPU1 | MB1 | RAM2 | SSD1 | GA2 |
| 11. | CPU1 | MB2 | RAM1 | SSD2 | GA1 |
| 12. | CPU1 | MB3 | RAM2 | SSD1 | GA2 |

**Total number of tests: 24+12 = 36 tests**

**Case 2:**

In this case, we know that some of the components are more popular than others. Therefore, we will prioritize the testing of the popular components to ensure that they are of good quality. We will perform the same tests as in Case 1, but for widely known models (RAM1, CPU2, MB1, SSD2, GA2), we can perform additional functional and stress tests to ensure their reliability.

CPU2: 2 tests each (functionality and stress testing)

MB1: 2 tests each (functionality and stress testing)

RAM1: 2 tests each (functionality and stress testing)

SSD2: 2 tests each (functionality and stress testing)

GA2: 2 tests each (functionality and stress testing)

**Total number of tests: 36 tests** (as in case1) **+ 10 tests**(additional tests) **= 46 tests**

**Case 3:**

In this case, we know that the goods came from dubious manufacturers, and there is a risk of compatibility issues. Therefore, we will perform the following tests:

1. Functional testing: To check if the component is working as expected.

2. Compatibility testing: To check if the component is compatible with other components in the system.

3. Performance testing: To check if the component is meeting the performance requirements.

4. Stress testing: To check if the component can handle heavy loads and stress.

CPU1, CPU2, CPU3: 3 tests each (functionality, performance, and stress testing)

MB1, MB2, MB3: 3 tests each (functionality, performance, and stress testing)

RAM1, RAM2: 3 tests each (functionality, performance, and stress testing)

SSD1, SSD2: 3 tests each (functionality, performance, and stress testing)

GA1, GA2: 3 tests each (functionality, performance, and stress testing)

**Together: 39 tests**

Compatibility testing: in this case, we need to perform additional testing to check for compatibility issues between components.

|  | **Processor models** | **Motherboards** | **Random Access Memory** | **Hard drives** | **Video cards** |
| --- | --- | --- | --- | --- | --- |
| **1** | CPU1 | MB1 | RAM1 | SSD1 | GA1 |
| **2** | CPU1 | MB1 | RAM1 | SSD1 | GA2 |
| **3** | CPU1 | MB1 | RAM1 | SSD2 | GA1 |
| **4** | CPU1 | MB1 | RAM1 | SSD2 | GA2 |
| **5** | CPU1 | MB1 | RAM2 | SSD1 | GA1 |
| **6** | CPU1 | MB1 | RAM2 | SSD1 | GA2 |
| **7** | CPU1 | MB1 | RAM2 | SSD2 | GA1 |
| **8** | CPU1 | MB1 | RAM2 | SSD2 | GA2 |
| **9** | CPU1 | MB2 | RAM1 | SSD1 | GA1 |
| **10** | CPU1 | MB2 | RAM1 | SSD1 | GA2 |
| **11** | CPU1 | MB2 | RAM1 | SSD2 | GA1 |
| **12** | CPU1 | MB2 | RAM1 | SSD2 | GA2 |
| **13** | CPU1 | MB2 | RAM2 | SSD1 | GA1 |
| **14** | CPU1 | MB2 | RAM2 | SSD1 | GA2 |
| **15** | CPU1 | MB2 | RAM2 | SSD2 | GA1 |
| **16** | CPU1 | MB2 | RAM2 | SSD2 | GA2 |
| **17** | CPU1 | MB3 | RAM1 | SSD1 | GA1 |
| **18** | CPU1 | MB3 | RAM1 | SSD1 | GA2 |
| **19** | CPU1 | MB3 | RAM1 | SSD2 | GA1 |
| **20** | CPU1 | MB3 | RAM1 | SSD2 | GA2 |
| **21** | CPU1 | MB3 | RAM2 | SSD1 | GA1 |
| **22** | CPU1 | MB3 | RAM2 | SSD1 | GA2 |
| **23** | CPU1 | MB3 | RAM2 | SSD2 | GA1 |
| **24** | CPU1 | MB3 | RAM2 | SSD2 | GA2 |
| **25** | CPU2 | MB1 | RAM1 | SSD1 | GA1 |
| **26** | CPU2 | MB1 | RAM1 | SSD1 | GA2 |
| **27** | CPU2 | MB1 | RAM1 | SSD2 | GA1 |
| **28** | CPU2 | MB1 | RAM1 | SSD2 | GA2 |
| **29** | CPU2 | MB1 | RAM2 | SSD1 | GA1 |
| **30** | CPU2 | MB1 | RAM2 | SSD1 | GA2 |
| **31** | CPU2 | MB1 | RAM2 | SSD2 | GA1 |
| **32** | CPU2 | MB1 | RAM2 | SSD2 | GA2 |
| **33** | CPU2 | MB2 | RAM1 | SSD1 | GA1 |
| **34** | CPU2 | MB2 | RAM1 | SSD1 | GA2 |
| **35** | CPU2 | MB2 | RAM1 | SSD2 | GA1 |
| **36** | CPU2 | MB2 | RAM1 | SSD2 | GA2 |
| **37** | CPU2 | MB2 | RAM2 | SSD1 | GA1 |
| **38** | CPU2 | MB2 | RAM2 | SSD1 | GA2 |
| **39** | CPU2 | MB2 | RAM2 | SSD2 | GA1 |
| **40** | CPU2 | MB2 | RAM2 | SSD2 | GA2 |
| **41** | CPU2 | MB3 | RAM1 | SSD1 | GA1 |
| **42** | CPU2 | MB3 | RAM1 | SSD1 | GA2 |
| **43** | CPU2 | MB3 | RAM1 | SSD2 | GA1 |
| **44** | CPU2 | MB3 | RAM1 | SSD2 | GA2 |
| **45** | CPU2 | MB3 | RAM2 | SSD1 | GA1 |
| **46** | CPU2 | MB3 | RAM2 | SSD1 | GA2 |
| **47** | CPU2 | MB3 | RAM2 | SSD2 | GA1 |
| **48** | CPU2 | MB3 | RAM2 | SSD2 | GA2 |
| **49** | CPU3 | MB1 | RAM1 | SSD1 | GA1 |
| **50** | CPU3 | MB1 | RAM1 | SSD1 | GA2 |
| **51** | CPU3 | MB1 | RAM1 | SSD2 | GA1 |
| **52** | CPU3 | MB1 | RAM1 | SSD2 | GA2 |
| **53** | CPU3 | MB1 | RAM2 | SSD1 | GA1 |
| **54** | CPU3 | MB1 | RAM2 | SSD1 | GA2 |
| **55** | CPU3 | MB1 | RAM2 | SSD2 | GA1 |
| **56** | CPU3 | MB1 | RAM2 | SSD2 | GA2 |
| **57** | CPU3 | MB2 | RAM1 | SSD1 | GA1 |
| **58** | CPU3 | MB2 | RAM1 | SSD1 | GA2 |
| **59** | CPU3 | MB2 | RAM1 | SSD2 | GA1 |
| **60** | CPU3 | MB2 | RAM1 | SSD2 | GA2 |
| **61** | CPU3 | MB2 | RAM2 | SSD1 | GA1 |
| **62** | CPU3 | MB2 | RAM2 | SSD1 | GA2 |
| **63** | CPU3 | MB2 | RAM2 | SSD2 | GA1 |
| **64** | CPU3 | MB2 | RAM2 | SSD2 | GA2 |
| **65** | CPU3 | MB3 | RAM1 | SSD1 | GA1 |
| **66** | CPU3 | MB3 | RAM1 | SSD1 | GA2 |
| **67** | CPU3 | MB3 | RAM1 | SSD2 | GA1 |
| **68** | CPU3 | MB3 | RAM1 | SSD2 | GA2 |
| **69** | CPU3 | MB3 | RAM2 | SSD1 | GA1 |
| **70** | CPU3 | MB3 | RAM2 | SSD1 | GA2 |
| **71** | CPU3 | MB3 | RAM2 | SSD2 | GA1 |
| **72** | CPU3 | MB3 | RAM2 | SSD2 | GA2 |

**Total number of tests: 39 tests + 72 tests = 111 tests.**