Compatibility Testing

Introduction

- Any software product can be architecturally well-designed, perfectly coded, but unless it clears the aspect of being able to function across the myriad computer system of target users, it will never be able to fare well in the market.

Introduction

- Compatibility testing gives the developers the confidence of the application's compatibility with the computing environment.
- Compatibility testing gives clarity of the application's ability to coexist with other functions and how well it gels with other systems. It can be categorized as a software non- functional test.
- Compatibility testing is mandatorily carried out to all applications, since it is used to detail the specification of the product, namely the different types of system hardware and software that works with the system.

Compatibility Testing

- Compatibility testing relates to testing the interactions between two different software, to make sure that both the software work correctly.
- The need for compatibility testing is high today, because most of the consumers demand data-sharing options with different types of software programs from various vendors.
- most programs were developed as standalone applications and ran only in a known environment setup. The reason was that the developers hesitated running the program on a different environment fearing corruption of the program.
- today there is a need for most programs to be compatible with different operating systems and Web browsers.
- programs also need to constantly import and export data to other programs that run simultaneously on the same hardware.

Compatibility Testing

- As a software compatibility test engineer, you need to ensure that the interaction between different software operates or functions as required by the users. Issues pertaining to the way in which the software functions with the various operating systems and the different types of hardware and software systems are identified.

Compatibility Testing

Compatibility testing helps you to avoid the dangerous and expensive hazards or troubles that can occur after the product is released into market.

Overview of Compatibility Testing

- Compatibility testing also relates to testing the interactions between programs or software either in the same computer or between different computers that are located thousands of miles away connected through the Internet.
- Interactions can be as simple as saving the data to a Compact Disc (CD) and carrying it to another computer situated across the room.

1. Copying text from a web page and pasting it on to a document in word processor.
2. Saving data related to accounts from one spreadsheet program to another spreadsheet program.

Overview of Compatibility Testing

- Compatibility testing is carried out using real-time environments and not virtual environments.
- Testing the compatibility of the product varies from one testing team to another. Each testing team will be assigned specific tasks to test.
- Tasks differ based on the system requirement and the software on which it runs.

Overview of Compatibility Testing

- If you have been assigned the task of conducting compatibility testing on a piece of software, the following checklist must be followed:

1. What are the various platforms and application software your software is designed to be compatible with?
2. What are the compatibility standards and guidelines to be followed and how should your software interact with other software?
3. What are the types of data that your software will use to interact and share with other software and platforms?

Platform and Application Versions

- The task of the marketing team is to select the target platform and compatible applications because the operating system, Web browser, compatible versions, and other features are designed based on customer perspective.
- Platform and application versions enable the development and testing teams to decide on what is to be done.

Platform and Application Versions

- Compatibility testing involves checking the compatibility of an application or website with several browsers, operating systems, and hardware. This testing is conducted on an existing environment either manually or on an automated basis.

Platform and Application Versions

- Through compatibility testing, one can be sure that:

1. The software is rigorously tested with all the operating systems, software applications, and hardware.
2. The code is stable in all environments and the error messages or user interactions are handled and presented in the same way regardless of the operating system.
3. The manual tests are carried out by assigning different team members to work on different screen resolutions to check for issues that arise.
4. The varying connection speed available to the user base is taken into account.

Platform and Application Versions

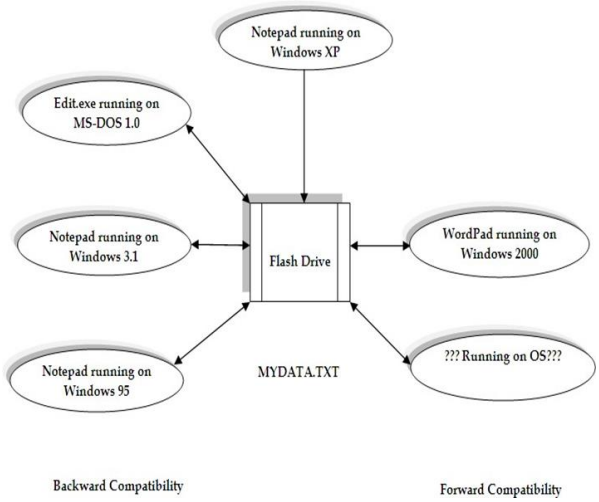
5. The checks on the non-functional test teams are planned while running the tests.
6. The performance of a system, application, or website on a network with varying parameters like bandwidth, variance in capacity, and operating speed of the hardware are evaluated.
7. The system or application performance in connection with the various systems or peripheral devices is evaluated.
8. The application or system performance with respect to the database it interacts with is evaluated.

Backward and Forward Compatibility

- Backward compatibility means that software works fine with the previous versions of the software.
- Forward compatibility implies that the particular software works well with the future versions of the software.
  - Backward compatibility: The compatibility of Microsoft Word 2007 version with Microsoft Windows XP operating system.
  - Forward compatibility: The compatibility of Microsoft Word 2003 version with Microsoft Windows 7 operating system

backward and forward compatibility

The simplest example for backward and forward compatibility is the .txt or text file. Figure to the right shows a text file created using Notepad 98 that runs under Windows 98 (it is backward compatible) and can be tested all the way back to MS-DOS 1.0. It is also forward compatible to Windows XP Service Pack 2 and is expected to go beyond that as well.



Testing Multiple Versions

- programmers have fixed several bugs and have also improved performances by adding new features to the existing code.
- There are thousands of existing programs for the present version of the operating system.
- The aim of the project is to ensure 100% compatibility. Equivalence partitioning is appropriately applied to reduce the job of testers.

Testing Multiple Versions

- The task of compatibility testing starts with the equivalence partitioning of all possible combinations of the software. This is done to ensure that the equivalence sets verify the accuracy of the interaction between the software. Although one can test all the possible software programs on the operating system, only the most important ones are finalized and tested.

Testing Multiple Versions

- The criteria for finalizing the most important programs are as follows:

1. Popularity: Select the first 100 or 1000 popular programs based on sales data.
2. Age: Select programs and versions that are less than three years.
3. Type: Select software from every relevant category by segregating the applications into types like accounting, databases, and communications.
4. Manufacturer: Select software based on the company that has created it.

Test websites against multiple browsers

- run multiple versions of IE on a computer is to run the older version/s of IE using Windows XP mode on a computer running Windows 7 Professional, Enterprise, or Ultimate edition. (Windows XP mode is an optional downloaded feature of Windows 7 Professional, Enterprise, and Ultimate editions that provides you a pre-installed image of Windows XP SP3 that you run using Windows Virtual system. A recently released update allows Windows XP Mode to run on a CPU without hardware virtualization.)
- Virtual PC

Running Multiple Versions of browsers

- disadvantages of using the Microsoft Virtual PC

1. You need a separate license for each of the Windows operating systems of the virtual machine created. (Today, large organizations have no trouble in obtaining extra licenses to install virtual machines. You can also consider buying the older versions of Windows like Windows 2000 to install in a virtual computer).
2. You cannot access the browsers that are installed in virtual machines from Dream Weaver's Preview in browser command.
3. Running several operating systems on one computer is resource-intensive, because the computers require more power and memory to handle the load.

VMware's free VMware Player, and VMware Server software work similar to Virtual PC and have the same pros and cons.

Standards and Guidelines

- standards and guidelines enable a software tester to follow the right approach of testing.
- There are two levels of standard requirements.

1 **High-Level Standards and Guidelines:**

Standards that guide a product's general operation, design, and supported features.

Analyze whether the software that is to be tested can run on Windows, Mac, and Linux operating systems.

It is also important to know on what browsers the software will run. This is done by considering the platform that has its own standards and guidelines.

It is possible to pass the compatibility testing by adhering to these standards and guidelines.

Standards and Guidelines

• Some of the examples for **logo requirements** are as follows:

(a) The software should support the mouse device with more than three buttons.

(b) The software should support installation on all the disk drives of a computer.

(c) The software should support longer filenames.

(d) The software must not read, write, or even use the old system files win.ini, system.ini, autoexec.bat or config.sys

Standards and Guidelines

- 2. Low-Level Standards and Guidelines:

- examine fundamental details such as file formats and network communication protocols.
- these requirements should be tested to assure compatibility.
- low-level standards are considered to be more important than the high-level standards. It is possible to create a program to run on Windows, although it may not have the design of the Windows software. Users will not appreciate the changes but will only emphasize on the use of the product.

Data Sharing Compatibility

- Checking the compatibility of the various applications during data sharing is known as Data Sharing Compatibility.
- a well-written program that adheres to standards and guidelines enables the users to transfer data to and from software efficiently and is considered to be a compatible product. The simplest way to transfer data from one program to another program is by saving and loading the data on storage devices.

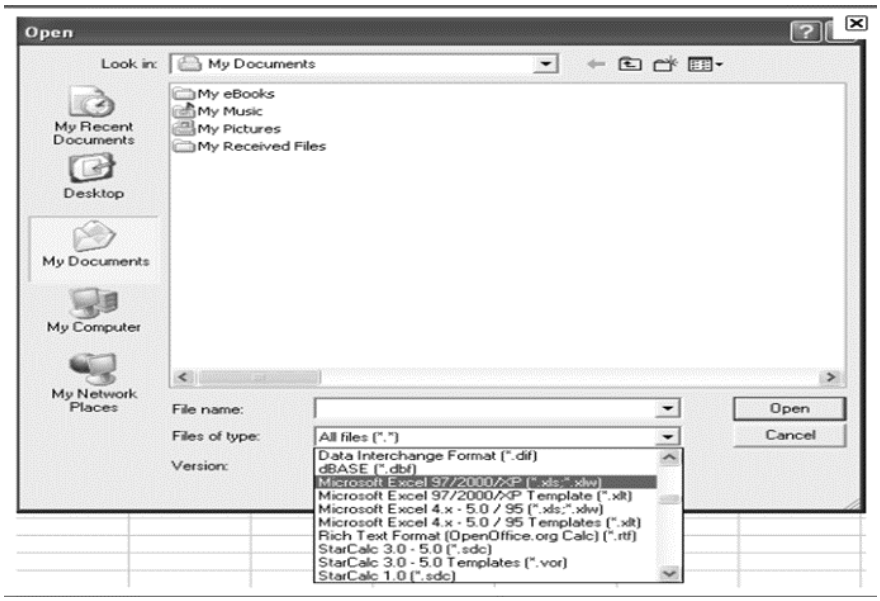
Data Sharing Compatibility

1. File Save and File Load: Disk sharing becomes a possibility only when one adheres to the low- level standards for the disk and file formats.

Eg Saving the file and loading the file are the most common data sharing methods

2. File Export and File Import: Many programs are compatible with their previous versions and with other programs through file export and file import.

Data Sharing Compatibility



File Export and File Import

- To test the file import feature, you need to create test documents in each compatible file by using the original software that was used to write the format. The documents are then partitioned based on the equivalence partition method and are then checked whether the importing codes convert to the new format.

Data Sharing Compatibility

3. Cut, Copy, and Paste: Cut, copy, and paste are the most common methods used for sharing data between programs without having to transfer the data to a disk. The process of transfer takes place through an intermediate program known as clipboard.

clipboard is designed to hold several data types. The most common ones are texts, pictures, and sounds. The data types can be in different formats -- for example, texts can be plain texts, pictures can be bitmaps, and so on.

Each time a user performs a cut or copy, the selected data is placed on the clipboard. When the paste operation is performed, the data gets copied on the destination software on the clipboard. Some of the applications accept only certain data types or formats to be pasted on them.

Data Sharing Compatibility

4. DDE, COM, OLE:

Dynamic Data Exchange (DDE – pronounced as D-D-E),

Component Object Model (COM—pronounced as oh-lay)

Object Linking and Embedding (OLE) are the various methods used in Windows to transfer data between two applications

The main difference between the clipboard method and the DDE and OLE data method is that the clipboard method allows data flow from one application to another on a real time basis, whereas with the DDE and OLE, data transfers can be achieved automatically.

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