1. **Elaborate on the differences between test cases and test plans with relevant examples.**

Test cases and test plans might sound similar but they are two distinct elements involved in the software testing process.

A *Test Plan* is a detailed document that outlines the objectives, scope, environment, approach and schedule for the testing activities in a project. A test plan answers the questions such as: What elements are to be test? What features are not required to test? What types of testing is to be done? What are the test strategies being used? And many more vital questions related to quality assurance. In short, a test plan is an overview of the how a product is going to be tested before production. Its main goal is to define the approach of verifying and validating the quality of a product ensuring that all the functionalities are working as intended, which makes the testing process a lot easier and mitigates risk.

A *Test Case* is a detailed document of a specific scenario or case. It focuses on a single individual entity. Test case is developed when a product’s functionality, durability, compatibility etc. needs to be thoroughly tested. It is a step-by-step document that specifies how to test a specific functional part of a certain product. Test cases studies on how the product should behave (expected outcome) and also how the product is behaving in the test (actual outcome). This helps the assurance team to understand whether the test case passes or fails.

To further differentiate between Test plans and Test cases:

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| Aspect | Test Plan | Test Cases |
| Purpose | Provides a proper guideline for the testing process | Validates a particular feature in detail. |
| Scope | Covers the entire planning process | Specification to individual aspects |
| Contents | Objectives, Test Environment, Criteria, Test items, Strategies | Test ID, Pre conditions, Outcomes, Status |
| Format | Narrative, reports | Tabular Structures |
| Ownership | Prepared by QA leads, managers | Prepared by individual QA analysts |
| Audience | Stakeholders, managers, QA leads | Test engineers, analyst who execute the tests |

1. **A headphone is produced with a detachable microphone. The microphone works only after being connected to the headset. The headphone also has a switch with different buttons - volume, microphone on/off. Now, develop a generalized test case for a freshly produced headphone with all of the scenarios.**

Test Case: Headphone Functionality with Detachable Microphone and Switch controls.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario ID | Test Scenario Description | Test Case ID | Test Case Title | Pre-Conditions | Steps to Execute | Expected Result | Actual Result | Status |
| 1 | Generalized test case for a freshly produced headphone | 1 | Verify that the microphone works after being connected to the headphone | **1.** Ensure that the headset is switched on.  **2**. The microphone must be connected to the headphone. | **1.** Turn on the headset  **2.** Connect the microphone with the headset | The microphone should start working | The microphone is working | Passed |
|  |  | 2 | Verify that the volume button should increase or decrease the volume of the headset | **1.** Ensure that the headset is connected to a compatible device (smartphone).  **2.** Confirm that the audio device is playing any audio. | **1.** Play the audio from the audio device.  **2**. Check if the sound gets louder when the volume-up button is pressed.  **3.** Check if the volume gets quieter when the volume-down button is pressed | **1.** The volume of the headset should get louder when the volume-up button is pressed and should get quieter when the volume-down button is pressed.  **2.** The volume level should be indicated in the audio device that is used. | Volume is increased when volume-up button is pressed and decreased when the volume-down button is pressed. | Passed |
|  |  | 3 | Verify that the microphone should turn on when the on button is pressed and should turn off when off button is pressed. | **1.** Ensure that the headset is powered.  **2.** Ensure that the microphone is connected to the headset. | **1.** Connect the microphone to the headset  **2.** Press the microphone-on button and check if the microphone is turned on.  3. Press the microphone-off button and check if the microphone is turned off. | The microphone should turn on when the on button is pressed and should turn off when the off button is pressed. | The microphone is turned on when the on button is pressed and is turned off when the off button is pressed. | Passed |

**3. Prepare a test plan for the above headphone produced.**

1. **Introduction**:

The purpose of this test plan is to validate the functionality, durability, usability and the performance of the headset with a detachable microphone. The product includes a switch with buttons for volume manipulation and for turning the microphone on or off.

1. **Scope**:

The types of testing that will be conducted are;

1. *Functional Testing*: This test involves testing the core functionalities of the headset such as volume controls, buttons, audio output and microphone performance.
2. *Durability testing:* Ensuring that the detachable microphone and switch controls are reliable under repeated use.
3. *Compatibility Testing*: Ensuring that the headphones works with devices such as smartphones, laptops etc.
4. **Objectives:**

* Verify that the microphone works after being connected to the headphone.
* Verify that the volume level increases or decreases as controlled by the user using the volume buttons.
* Validate the functionality of the microphone on/off buttons.
* Identify and document the defects.

1. **Test Items:**

* Compatible device. (Smartphone, Laptop)
* Detachable Microphone.
* Switch Controls. (Volume buttons and Microphone on/off switch)
* Audio Output Quality

1. **Inclusions:**

Features to be tested;

* Audio Clarity.
* Microphone Functionality.
* Switch Control Buttons.
* Connection with audio devices.

1. **Exclusions:**

Features not to be tested;

* Testing with equalizer.
* Puff filtered microphone.

1. **Approach:**

To evaluate the functionality of the Headphone with the detachable microphone, manual testing will be used. Testing will be conducted in a controlled environment and on different audio devices for compatibility and also the durability of the detachable microphone will be tested.

1. **Entry Criteria:**

* The headphone is powered and ready to be used.
* The detachable microphone is also assembled.
* The compatible devices for testing are also available.

1. **Exit Criteria:**

* All the planned tests are executed.
* The issues are documented

1. **Test Environment:**

The test is held in a quiet room with no disturbance.

1. **Risk and Mitigation:**

|  |
| --- |
| Risk: Volume control buttons maybe inconsistent or inaccurate. |
| Mitigation: Test the volume control buttons over multiple devices |

|  |
| --- |
| Risk: The headset might not work on some compatible devices. |
| Mitigation: Test with wide range of devices. |

1. **Schedule:**

|  |  |
| --- | --- |
| **Activity** | **Duration** |
| Test Plan Development | 4 days |
| Functional Testing | 3 days |
| Durability testing | 1 day |
| Compatibility Testing | 2 day |
| Final Documentation | 4 days |

1. **Approval:**

Test Lead: Maitry Bajracharya

Product Manager: Anonymous

Quality Assurance Head: Sir/mam

1. **Explain the difference between bug and issue by explaining bug cycle steps.**

A bug refers to a certain defect or error in the system/software that causes it to behave incorrectly or produce unintended results. Bugs occur due to errors created in the software development process.

An issue is a certain problem in the system that needs to be addressed. Issues can be defined as the various occurrence that lead to disturbance in the system or software.

An issue includes bugs as well. It is a broader concept.

Bugs are specific technical flaws or defects whereas Issues are broader and includes various types of problems in the software.

A *bug lifecycle* consists of stages that a bug goes through before being eradicated.

Bug lifecycle shows how a bug is reported, assigned and fixed by the QA testers.

The various stages of Bug Lifecycle are;

1. *New: The bug has been reported or identified but not verified yet*
2. *Assigned: In this stage, the bug is assigned to a team or testers for fixing.*
3. *Open: The bug is being worked on for fixing purpose.*
4. *Fixed: This is the stage where the bug has been fixed.*
5. *Retest: The testing team verifies and confirms that the bug has been fixed.*
6. *Closed: This stage is where the bug has been confirmed to be fixed and no further action is required.*
7. **Prepare a bug report for the failed cases of the headphones**

Bug Report for the failed cases in the Headphone testing.

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Bug ID | Bug Description | Priority | Pre-Conditons | Steps to execute | Expected Result | Actual Result | Status |
| 1 | The volume does not increase when the user presses the volume-up button | High | **1.** The headphone should be powered.  **2.** The audio device should be working and connected properly to the headset | **1.** Power on the Headphone.  **2.** Connect the headphone to the audio device and play an audio.  **3.** Press the volume-up button to increase the volume. | The volume on the headset should increase. | The volume does not increase | Open |
| 2 | The detachable headphone does not work when connected to the headset | High | **1.** The Headphone must be powered and ready for use.  **2.** Recording application on the connected device should be available | **1.** Turn on the headphone.  **2.** Connect the headphone to an audio device.  **3.** Open a recording app and test if the audio from the microphone is recorded | The audio spoken to the microphone should be recorded | The audio spoken to the microphone is not recorded. | Open |

1. **Explain briefly about UI/UX Tests and prepare a Checklist for UI/UX Testing.**

UI/UX tests refers to tests that are conducted to ensure that the software is visually appealing and the user experience is smooth and satisfying. UI/UX stands for User Interface and User Experience. These test helps to verify the usability, design, outlook, consistency and functionality of a software. This is an important test conducted in the process of software development. UI test focuses on the design and appearance of the software whereas UX test focuses on the usability, user friendly, and accessibility aspect of the software.

Checklist for UI/UX testing consists of all the aspects that come under the testing process of UI/UX.

1. Visual design:

* Verify the alignment of the elements
* Verify the consistency of font size
* Check for correct design specification

1. Functionality

* Test if all the buttons work as intended.
* Verify that the transitions are smooth.
* Verify that the pop-up modules are correctly programmed.

1. Consistency

* Ensure that the design of the software is consistent.
* Verify that all the data is consistent.
* Check if the UI elements maintain the same format.

1. Usability

* Verify that the software is easy to understand and use.
* Verify that there is no complicated login system.
* Check the users are able to use the system with no confusion.

1. Performance

* Measure the page loading time.
* Verify the speed of the software
* Verify the smoothness in interaction with the software.

1. **If you encounter a technology or tool you're not familiar with during an internship project, how would you go about learning it?**

If I were to encounter such technology or tool that I was unfamiliar with, then I would firstly try to learn about it with help of the internet. As I am of an inquisitive nature, I would do a detailed research on the tool and make myself a bit knowledgeable. I would then ask my QA leads or seniors regarding the topic as they are likely to be familiar with the tool, I could learn a lot with the help of their guidance. Seeking for guidance and researching about the technology will be my main priorities.

After seeking guidance and researching, I would then set specific time for learning and regularly compare my understandings with my peers. I feel like this will be a good way to quickly and effectively familiarize myself with the new technology and tools.

**8. You can provide your personal experience here that motivates you for this work, which is why you selected QA for the internship.**

I have always had a craving for quality in any products. The detailing and consistency of products was always compelling to me. Similarly in the field of IT, I had special interest on how the quality of the software should be and how each aspect of a software or a product should work together to build a proper quality software or product.

As I am undergoing my academics, I have started to realize that I am more into Quality Assurance than coding and implementation. My inquisitive nature and attention to detail has pushed me towards this field and I am well aware how important Quality Assurance is.

QA combines analytical thinking, problem solving, and technical skills which resonates with me. In a role like QA you have to be very active as a small mistake could lead to an issue and the functionality of the software could be hindered.

My reason for choosing QA for my internship is because I have a passion for quality and attention to detail. I will be able to learn from experts regarding the quality assurance process and how a company’s product is tested before production. I believe that I will be able to learn a lot from this internship and develop my skills and utilize them in real world scenarios. I find the responsibility of ensuring high quality products is intriguing. It will be a great learning experience for me.