# Methodologies

## White box testing

### What is white box testing

White box testing also know by clear box and glass box testing is a form of structural testing performed by developers of a program to examine and test the internal components of a program.

### Techniques used in white box testing

Whitebox testing has a variety of techniques used to test a program that can range from testing small components to the entire system.

#### Unit Testing

Unit testing involves testing individual components of a program such as specific scripts or induvial parts of script such as its methods and functions. This testing is important as it can catch bugs early before they become major problems. Unit testing also helps ensure that the quality of code is clear.

Unit testing is done by:

1. Identifying the unit, the smallest testable component.
2. Create a test case that provides an input to the unit being tested and gives an output.
3. Execute the test.
4. Analyse the results of the test. If it causes and error or fails, identify the fault and fix it then repeat the test.
5. Repeat the process for the other units identified.

#### Integration Testing

Integration testing involves testing interactions and combinations between multiple components of a system. For example, in a unity project this would be testing the interactions between two scripts on separate objects such as checking if a bullet script on a bullet object is interacting with the health script of an enemy object. The scope of this testing is purely focused on interactions and not the full functionality of the component itself.

Integration testing is done by:

1. Identifying the components that are being tested and identifying how they will be interacting with each other.
2. Set up a testing environment where you can test the interactions between the components.
3. Create a test case that will create the action you wish to test.
4. Execute the test.
5. Analyse the results of the test. If an error or failure occurs, fix the error and run the test again.
6. Repeat for other component interactions.

#### Ad hoc testing

Ad hoc testing is a form of informal testing where developer tests any part of a program off intuition without much plan. This form of testing is usually performed naturally by developers who are familiar with a certain software or programming language to identify common errors. Ad hoc testing can be very useful at finding bugs fast and being able to fix issues quickly without the need for formal test plans.

Ad hoc testing does have disadvantages though as it tends to lack documentation means it can be very inconsistent and make reproducing issues difficult. It also leaves the possibility of certain aspects not being covered.

## Black box testing

### What is black box testing

Black box testing a form of testing usually done by non-developers. Black box testing is usuall

#### System Testing

System testing is a technique that is performed on completed builds of a program. System testing involves