EXPERIMENT NO. 2

Date:

Aim:	Analyse Black box and White Box Testing.
Objective:	To compare and understand the implementation of both black box and White box testing Techniques.

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"Testing"

term theory: The process of evaluating a system, a product or a service to determine weather it meets specified requirements is free from defects and is fit from it's intended purpose.

Example_1: A user testing a websites login's functionality without knowing how the authentication process works internally.

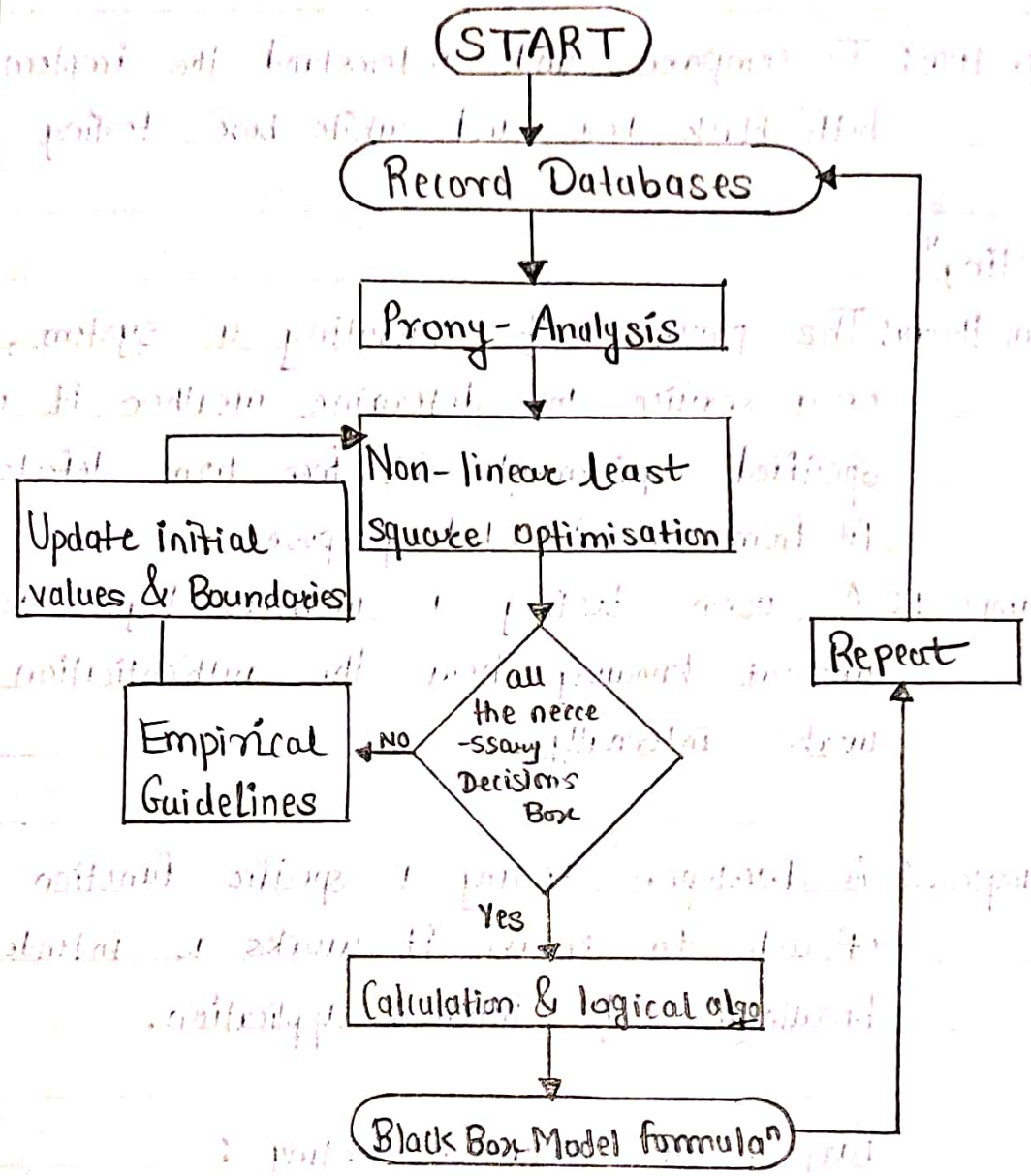
Example_2: A developer testing a specific function or module of code to ensure it works as intended, using knowledge of internal application.

Purpose of Software testing :

i] Validation and Verification : Ensures that the software meets the business and technical requirements that guides it's design & development.

ii] Error Detection : Identifies defects, gaps or missing requirements contrary to the actual req.

Flowchart: Black Box Testing /: Maths LR, problem solving FC:



Introduction: Black box testing and white box testing are two fundamental testing techniques used in software testing. Black box testing focuses on testing the functionality of the software without the knowledge of it's structure, while white box testing examines the internal code & the logic of the code's software.

Test : Black Box testing :

It is a software testing methodology that focuses on the functional requirements of a system without delving into it's internal workings or implementation ~~skills~~ details. In other words, testers perform Black box testing without any prior knowledge of the system's code, algorithms or intricate internal pathways. Instead, they zero in on a simple principle : inputs and outputs. It's like evaluating a vending Machine you don't need to know how it dispenses.

Key Features of Black Box Testing :

- No knowledge of Internal Code : Testers conducting Black Box Testing don't have access to the software's internal code. They focus soley on understanding the system's behaviour based on the inputs provided and the resulting outputs.

- Requirments Centric : Black Box testing ensures that a system meets the requirments specified by the customer or user. It's all about validating weather the software behaves as expected without peeking under the hood.

- Independence from Implementation Details : Unlike it's counter part, White Box testing (which examines internal code), Black box testing does not care about how the System achelve it's functionality. It's more concerned with weather it delivers the desired outcomes.

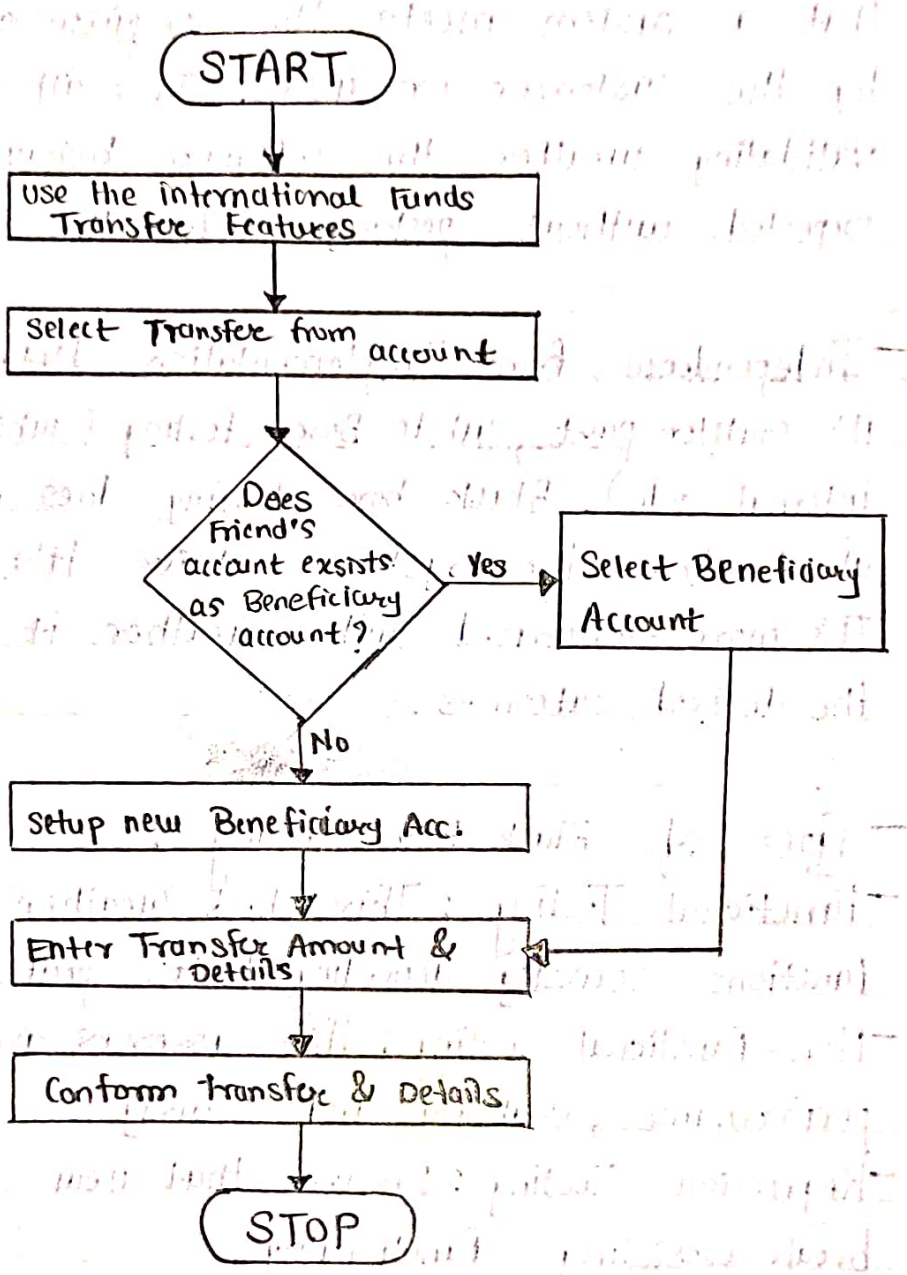
—— Types of Black Box Testing :

- Functional Testing : This check weather the software functions correctly according to it's specifications.
- Non-functional Testing : This assesses aspects like performance, Usability and Security.
- Regression Testing : Ensures that new changes don't break exsisting functionality.

—— Parameters that can be Identified by Black Box Testing :- System responses to expected and unexpected user actions.

- Response time	- Reliability issues.
- Usability issues	

Flowchart: White Box Testing : On an ATM Transaction sys:



Test: White Box testing:

White Box testing is also known as structural testing, code-based testing or glass-box testing, is a software testing technique that focuses on the software's internal logic, structure and coding. Testers get complete access to the source code, design documents and all the intricate details. They become software detectives, investigating every aspect and cannory of system.

Key features of White Box Testing:

- Complete Visibility: Testers have the equivalent of a backstage pass they can see how the software acts behind the scenes.
- Thoroughness: White Box testing ensures complete code coverage. Every part of the software's internal structure gets scrutinized.
- Automation: Test cases can be easily automated, saving time & resources.

Types of White Box Testing:

- Statement Coverage: Ensures that each line of code is executed at the least once.
- Branch coverage: Check if all possible branches are traversed i.e (if, else, loops are evaluated).
- Path Coverage: Examines all possible execution paths through the code.

Table of Comparison:

Entity	Black Box Testing	White Box Testing
i] Focus :	Functionality	Internal code and logic
ii] knowledge level :	No knowledge of internal structure.	Detailed knowledge of internal structure.
iii] Scope :	Functional Level	Unit level, Integration level, System level.
iv] Implementation :	By Testers	By Developers.
v] Testing level :	Functional Testing	Unit Test, integration Test, System Test.
vi] Testing Initiation :	After req. gathering	After coding / code / Development phase.
vii] Programming :	Not Required	Heavily Required.
viii] Testing Focus	Input and output operations.	Code paths & logic flows.
ix] Time Consumption:	Less time Consumption	More time Consumption.
x] Approach:	Top-down approach	Bottom-up approach.

Conclusion: ~~We have successfully studied both black box and white box testing by studying examples.~~

Conclusion: We have successfully studied both black box and white Box Testing Techniques.

——Parameters that can be identified by White Box Testing :- Correctness of code execution paths.
- Boundary Condition.
- Error Handling mechanisms.
- Data flow and control flow.

Conclusion: We have successfully studied both black box and white box testing Techniques.