

Software Testing

Slides
25-26

Date: _____

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- Testing:
- Showing what program is doing
 - Detecting anomalies in the system.

↓
errors/scratches / unexpected results / messages

- Usually uses SAMPLE DATA.

- custom software
 - at least 1 test for every requirement
- Testing can be manually or automatically.
- Broader part of verification and validation. ← testing
- Testing can be done in 2 types.
 - (1) Black box
 - without inner details
 - (2) White box
 - with inner details
- Can be done to check (1) Functional requirements
 - (2) Non Functional requirements
 - Performance / Scalability

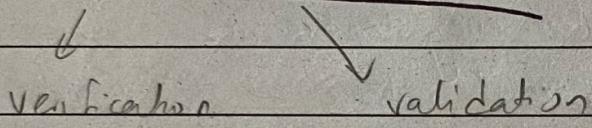
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Date:

Validation and defect testing

Validation : user requirements poori hou rhiin hain ga nahi
Defect testing : bugs and anomalies

V and V confidence



V and V confidence → system is fit for purpose.

- Depends on :

Software Purpose (hospital software vs Learning)

User Expectations (agar low exp. kar khey too less vigorous)

Marketing Environment (agar jaldi launch karna hai
too speed > vigorous tech)

Inspection Vs testing

↓
static

dynamic

- Inspection is used to discover problems in a static system jee koy using a tool ya code ko inspect karay
- Testing is used for product behaviour (dynamic) program execution koy bhad

Inspection

- people examining to find anomalies / defects.
- * • no execution
- could be in requirements / design / data

Advantages (Inspection)

- Testing may errors can mark other errors

- incomplete version can be inspected (testing koy koy paisa khuch karo, specified taur banao)

errors koy interaction say
perha error dooring say
chup jaata hain

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- Can ensure compliance with standards, portability and maintainability
- Is more effective for defect discovery.

Problems (Inspection)

- Cannot check defects from unexpected interaction
key word each time.
- Cannot check non-functional characteristics. (performance / speed)
- Inspection & testing complement each other
^{and}
(not oppose verification technique)

Stages of testing

- Development (during development)
- Release (separate team, after release) QA ~~key~~ key team
- UAT (use key environment main)

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Date:

Development Testing

Could be done by:

- Development team
- Developer/tester with ~~test~~ pair main kaan
- Separate testing team (saarey crucial hoo job)

Stages of Development testing

SDLC ke development phase mein

- Unit testing individual programs units / methods | test functionality
- Component Testing Multiple units ko mila kya test
- System testing Components ka interaktion

SDLC ka
Testing Plan

SDLC = Software Devolop Life Cycle

~~Object-Oriented Testing~~: Object Class testing / individual functions

- inheritance say main la bawala hai
kyunki info (to be tested) is not localised.

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Automated testing

- testing without manual intervention
 - different framework can be used
- setup part (initialize system with test case)
- call part (call object to be tested)
- assertion part (compare results)

• Kabhi kabhi developed object ~~is dependent~~ has dependencies with under development naya object so we use dummy objects.

Choosing test case :

Partition testing

- common characteristics
alon ko saath

Guideline based testing

- use guideline (joo programs)
usually kartay hain)

Partitioning

Partition testing

- input and output result along along classes
main aajatay hain

(groups)

- groups unki banti hain jo same result day
usually

Easy example from ~~EP~~ Chd GPT

Ek software hai jo 1-1000 tak input leta
hai

Ab Equivalence partitioning kya karega ky
input data ko 3 groups main divide kar lega

$(1-1000)$	< 1	> 1000
	less than 1	greater than 1000

ab sab har group kay liy along (1)
test case ban jaega

is se ye hogा ky saare test cases will be
tested.

Guidelines for testing

for array / list / program

- alag alag size ka array s say check karo.
- array ka pehli, aakhri aur koi beech ki value say test karo.
- Khaali array say test karo
(array length - 1)
- general
- Ese input too jinsse error aye.
- Ese input too jissay buffer overflow hoo.
- input repeat Karke dekho if system consistent hai.
- Invalid outputs force karo.
- ko output too large ya too small try karo.