

CMPT 473
Software Quality Assurance

Test Planning

Nick Sumner

Planning Tests

- We have looked at fundamental criteria for evaluating test suites.

Planning Tests

- We have looked at fundamental criteria for evaluating test suites.
- We still haven't tried to rigorously create tests.

Planning Tests

- We have looked at fundamental criteria for evaluating test suites.
- We still haven't tried to rigorously create tests.
- Recall: Quality comes from process
 - The testing process is guided by a *test plan*

Test Plans

Test Plan

- Documentation of the goals, concerns, methodology, and metrics for testing

Test Plans

Test Plan

- Documentation of the goals, concerns, methodology, and metrics for testing
- Not a test suite

Test Plans

Test Plan

- Documentation of the goals, concerns, methodology, and metrics for testing
- Not a test suite
- A process for applying and evaluating testing over the lifetime of a project

Test Plans

Test Plan

- Documentation of the goals, concerns, methodology, and metrics for testing
- Not a test suite
- A process for applying and evaluating testing over the lifetime of a project

What test plans have you seen
so far in co-ops/internships?
What guidelines/rules did they contain?

Test Plans

Test Plan

- Documentation of the goals, concerns, methodology, and metrics for testing
- Not a test suite
- A process for applying and evaluating testing over the lifetime of a project

What test plans have you seen
so far in co-ops/internships?
What guidelines/rules did they contain?

Were these useful? Why?

Test Plans

Test Plan

- Documentation of the goals, concerns, methodology, and metrics for testing
- Not a test suite
- A process for applying and evaluating testing over the lifetime of a project

Being **too specific** or detailed is a problem, the plan should **guide the process** but not become a burden itself.

Test Plans

Test Plan

- Documentation of the goals, concerns, methodology, and metrics for testing
- Not a test suite
- A process for applying and evaluating testing over the lifetime of a project

Being too specific or detailed is a problem, the plan should guide the process but not become a burden itself.

The nature & uses of a test plan depend on the project.

Why Use Test Plans?

- They act like requirements and specifications, but for the testing process

Why Use Test Plans?

- They act like requirements and specifications, but for the testing process

What happens if you skip clear requirements and specifications for the software itself?

Why Use Test Plans?

- They act like requirements and specifications, but for the testing process
 - Clear definition of what to do, how, and when

Why Use Test Plans?

- They act like requirements and specifications, but for the testing process
 - Clear definition of what to do, how, and when
 - Enable developers (& customers) to communicate about the process

Why Use Test Plans?

- They act like requirements and specifications, but for the testing process
 - Clear definition of what to do, how, and when
 - Enable developers (& customers) to communicate about the process
 - Structures the process to aid in scheduling & management

Why Use Test Plans?

- They act like requirements and specifications, but for the testing process
 - Clear definition of what to do, how, and when
 - Enable developers (& customers) to communicate about the process
 - Structures the process to aid in scheduling & management
 - Testing after the fact is too late

What Should It Include?

Structure may vary but contents should show

- Purpose & Objectives

What Should It Include?

Structure may vary but contents should show

- Purpose & Objectives
- Requirements
 - Environment, resources, dependencies

What Should It Include?

Structure may vary but contents should show

- Purpose & Objectives
- Requirements
 - Environment, resources, dependencies
- Schedule and/or personal responsibilities

What Should It Include?

Structure may vary but contents should show

- Purpose & Objectives
- Requirements
 - Environment, resources, dependencies
- Schedule and/or personal responsibilities
- Evaluation Criteria (Test Requirements)

What Should It Include?

Structure may vary but contents should show

- Purpose & Objectives
- Requirements
 - Environment, resources, dependencies
- Schedule and/or personal responsibilities
- Evaluation Criteria (Test Requirements)
- Expected Risks & Contingencies

What Should It Include?

Structure may vary but contents should show

- Purpose & Objectives
- Requirements
 - Environment, resources, dependencies
- Schedule and/or personal responsibilities
- Evaluation Criteria (Test Requirements)
- Expected Risks & Contingencies
- Deliverables

Purpose

May apply testing at many phases of the lifecycle:

- *Unit test plans*- correctness of individual components

Purpose

May apply testing at many phases of the lifecycle:

- *Unit test plans*- correctness of individual components
- *Integration test plans*- correct component interaction

Purpose

May apply testing at many phases of the lifecycle:

- *Unit test plans*- correctness of individual components
- *Integration test plans*- correct component interaction
- *System test plans*- whole system concerns like correctness, throughput, responsiveness, & reliability

Purpose

May apply testing at many phases of the lifecycle:

- *Unit test plans*- correctness of individual components
- *Integration test plans*- correct component interaction
- *System test plans*- whole system concerns like correctness, throughput, responsiveness, & reliability
- *Acceptance test plans*- adherence to customer requirements

Purpose

May apply testing at many phases of the lifecycle:

- *Unit test plans*- correctness of individual components
- *Integration test plans*- correct component interaction
- *System test plans*- whole system concerns like correctness, throughput, responsiveness, & reliability
- *Acceptance test plans*- adherence to customer requirements
- *Regression test plans*- regular tests to maintain quality

Purpose

May apply testing at many phases of the lifecycle:

- *Unit test plans*- correctness of individual components
- *Integration test plans*- correct component interaction
- *System test plans*- whole system concerns like correctness, throughput, responsiveness, & reliability
- *Acceptance test plans*- adherence to customer requirements
- *Regression test plans*- regular tests to maintain quality
- *Master test plans*- overall plan for all testing
- ...

Objectives

Clearly identify the goals of testing

Objectives

Clearly identify the goals of testing

- Specification of the software & feature under test

Objectives

Clearly identify the goals of testing

- Specification of the software & feature under test
- Functional requirements that the test process should help assure.

Objectives

Clearly identify the goals of testing

- Specification of the software & feature under test
- Functional requirements that the test process should help assure.
- Nonfunctional requirements
 - resources, performance, reliability, portability, usability,
...

Test Process Requirements

Environmental

- What platforms, resources, and other preconditions are assumed for running the test?

Test Process Requirements

Environmental

- What platforms, resources, and other preconditions are assumed for running the test?
 - e.g. operating system, operating system version, supporting software/libraries, build tools, processor, attached hardware, remote networks/servers, ...

Addressing Multiple Configurations

Many different environments & build options may be desired.

Addressing Multiple Configurations

Many different environments & build options may be desired.

- Once again, combinatorial complexities arise

Addressing Multiple Configurations

Many different environments & build options may be desired.

- Once again, combinatorial complexities arise

Options

- Test most expected / common configurations

Addressing Multiple Configurations

Many different environments & build options may be desired.

- Once again, combinatorial complexities arise

Options

- Test most expected / common configurations
- Test most extreme scenarios

Addressing Multiple Configurations

Many different environments & build options may be desired.

- Once again, combinatorial complexities arise

Options

- Test most expected / common configurations
- Test most extreme scenarios
- Combinatorial testing once again

Deliverables

What are the intended results?

Deliverables

What are the intended results?

What do you expect to see from running a test suite?

Deliverables

What are the intended results?

- Documented test cases?
- Test scripts?
- Logs of the test process?
- Summaries of failures?
- Aggregate summaries? (How many failed/passed)
- Adequacy assessments?

Balancing

Test plans can be *either* an asset or a liability.

Balancing

Test plans can be *either* an asset or a liability.

- Monolithic & high risk process?

Balancing

Test plans can be *either* an asset or a liability.

- Monolithic & high risk process?
 - Lasting detailed documentation helps mitigate risk

Balancing

Test plans can be *either* an asset or a liability.

- Monolithic & high risk process?
 - Lasting detailed documentation helps mitigate risk
- Fast paced, agile, & low risk?

Balancing

Test plans can be *either* an asset or a liability.

- Monolithic & high risk process?
 - Lasting detailed documentation helps mitigate risk
- Fast paced, agile, & low risk?
 - Less detailed docs & more detailed whiteboarding.

Balancing

Test plans can be *either* an asset or a liability.

- Monolithic & high risk process?
 - Lasting detailed documentation helps mitigate risk
- Fast paced, agile, & low risk?
 - Less detailed docs & more detailed whiteboarding.

There is no cookie cutter process
to follow *every* time.