

Software Engineering Experimentation

Analytical Thinking: Assessments and Assertions

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Assessments

Judging or determining some quality about a person or situation.

- He is a good teacher
- She is a good student
- He is a good husband
- She is a good researcher
- He is an effective manager
- He is quite tall

Assertions

Statements that can be either True or False; the validity is observable.

- His exams cover all the material
- She always reads the material before class meets
- She has all As
- He always considers her feelings
- She has published more than 40 papers
- Her papers are referenced hundreds of times
- The results of her research are being put into practice
- His employees always achieve their goals
- His employees give him above-average reviews
- He is 180 cm tall

Preparation for Action

An assessment is often made as a preparation for action.

- Accepting a job
- Giving a promotion
- Making a recommendation
- Working on a project
- Taking a class
- Voting for a candidate
- Buying a car

Grounding

An assessment is well grounded if the assertions *adequately* support the assessment.

Standards

- The standards for whether a set of assertions adequately support the assessment *varies* and are determined by the *community*.
- Reasons that a set of assertions do not meet the standards for supporting an assessment:
 1. not enough assertions
 2. incorrect assertion
 3. different standards

Levels of Competence - Performance



1. **Beginner**
No knowledge or skills
2. **Novice**
Understands rules or process
3. **Competent**
Usually does what is expected
4. **Proficient**
Others admire performance and sets a new standard for others
5. **Virtuoso**
Widely admired and inspirational, helps others rise to new heights of excellence
6. **Master**
Superior performance at a level that most could never reach

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Levels of Competence - Grades



1. **A**
Superior demonstration of knowledge
2. **A-**
Excellent demonstration of knowledge
3. **B+**
Understands most material
4. **B**
Performs as expected, understands most material, some problems
5. **C**
Significant lapses in knowledge, mostly adequate
6. **F**
Inadequate, most material not learned.

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Assessing a Paper

- Preparation for action : Accept or Reject
- Assertions : Results are correct, etc
- Assessment : The paper is publishable
- Standards : Conferences and journals each have a unique set of standards
 - Set by community – conference program committee, program chair, journal editor, associate editor, reviewers
 - We need multiple reviewers to form a community