IEEE STANDARD 1016-1998 RECOMMENDED PRACTICE FOR SOFTWARE DESIGN DESCRIPTION

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최가영

Considerations for producing an SDD

- Software life cycle
- SDD within the life cycle
- Purpose of an SDD

Software life cycle

-Period of time that starts when a software product is conceived and ends.

-The life cycle approach is an effective engineering management tool.

- Consist of 10’s phase.

SDD within the life cycle

- SDD (Software Design Description)
- SDD records the result of the design processes that are carried out during the design phase.

Purpose of an SDD

The SDD shows how the software system will be structured to satisfy the requirements identified in the software requirements specification

IEEE Std 830-1998

Design description information content

- Introduction
- Design entities
- Design entity attributes

Design entities

- Design entities result from a decomposition of the software system requirements.
- Although entities are different in nature, they possess common characteristics.
- The common characteristics of entities are described by design entity attributes.

Design entity attributes

- A design entity attribute is a named characteristic or property of a design entity.
- Design entity attributes can be thought of as questions about design entities.

Three criteria.

- a) The attribute is necessary for all software projects.
- b)An incorrect specification of the attribute value could result in a fault in the software system to be developed.
- c)The attribute describes intrinsic design information and not information related to the design process.

The attribute and associated information items

- 1.Identification
- 2.Type
- 3.Purpose
- 4.Function
- 5.Subordinates
- 6.Dependencies
- 7.Interface
- 8.Resources
- 9.Processing
- 10.Data

Identification

- *"The name of the entity."*

-The names for the entities may be selected to characterize their nature.

Type

- *"A description of the kind of entity."*

  - The type attribute shall describe the nature of the entity.
  - It may simply name the kind of entity, such as subprogram, module, process, or data store.

Purpose

- *"A description of why the entity exists…"*

- The purpose attribute shall provide the rationale for the creation of the entity.

Function

- *"A statement of what the entity does."*

- The function attribute shall state the transformation applied by the entity to inputs to produce the desired output.

Subordinates

- *"The identification of all entities composing this entity."*

  - The subordinates attribute shall identify the composed of relationship for an entity.

Dependencies

- *"A description of the relationships of this entity with other entities."*

- The dependencies attribute shall identify the uses or requires the presence of relationship for an entity.
- These relationships are often graphically depicted by structure chart, data flow diagram, and transaction diagrams.

Interface

- *"A description of how other entities interact with this entity."*

  - The Interface attribute shall describe the methods of interaction and the rules governing those interactions.

Resources

- *"A description of the elements used by that external to the design."*

  - The resource attribute provides information about items,

  such as physical devices(printer, disc-partition, memory bank), software services(math library, operating, system services), and processing resources.

Processing

- *"A description of the rules used by the entity to achieve its function."*

  - The processing attribute shall describe the algorithm used by the entity to perform a specific task and shall include contingencies.

Data

- *"A description of data elements internal to the entity."*

  - Data information shall describe everything pertaining to the use of data or internal data structures by this entity.

Design description organization

- Introduction

  - The notion of design views

  - A practical organization of the necessary design information is essential to its use.

- Design views

  -The user is able to focus on design details from a different perspective or viewpoint by organized entity attribute information.

Design description organization

Design views

- Decomposition description
- Dependency description
- Interface description
- Detailed description

Decomposition description

- Scope

  -Partition of the system into design entities

- Use

  - Designers and maintainers use this to identify the major design entities of system.

- Representation

  - hierarchical decomposition diagram

  - natural language

Dependency description

- Scope
  - The dependency description specifies the relationships among entities.
  - The dependency description provides the information needed to easily perceive about system actions.
- Use
  - It can aid in producing the system integration plan.
- Representation
  - data flow diagrams, structure charts, transaction diagram

Interface description

- Scope

  - List of everything a designer, programmer, or tester needs to know to use the design entities that make up the system

- Use

  - As a binding contract among designers, programmers, customers, and testers.

- Representation

  - functional model, scenarios for use, and the interaction language

Detailed design description

- Scope

  - The detailed design description contains the internal details of each design entity.

- Use

  - by programmers prior to implementation.

  - it can be used to aid in producing unit test plans.

- Representation

  - Program design language, metacode, graphical methods.

Recommended design views

Design view	Scop	Entity attributes	Example representation
Decomposition description	Partition of the system into design entities	Identification, type, purpose, function, subordinates	Hierarchical Decomposition diagram, natural language
Dependency description	Description of the relationships among entities and system resources	Identification, type, purpose, dependencies, resources	Structure charts, Data flow diagrams, transaction diagrams
Interface description	List of everything a designer, programmer, or tester needs to know to use the design entities that make up the system	Identification, function, interfaces	Interface files, Parameter tables
Detailed description	Description of the internal design detailed of an entity	Identification, Processing, data	Flowcharts, N-S charts, P0|

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감사합니다..