

System Analysis and Design

A Brief Introduction to the Course

Salahaddin University
College of Engineering
Software Engineering Department
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http://www.amanj.me/wiki/doku.php?id=teaching:su:system_analysis_and_design

Who am I?

- 27 years old.
- M.Sc. in Computer Science, Uppsala University 2011.
- B.Sc. in Software Engineering, Salahaddin University 2006.
- I am a free and open source software advocate.
- I have some activities against copyright infringement.
- My research interest is type systems.

The Course Organization

- The course consists of 16 lectures and 2 mandatory assignments.
- Each assignment weighs 10 marks, and they altogether weigh 6 bonus points for the final mark.
- The passing mark is 50 out of 100.
- The highest mark is 100, the lowest is 0 (if you get 0 you deserve 0).
- Cheating (even helping a friend to cheat), results in 0 for the doer(s).

The Course Organization, *Cont'd*

- The assignments help you collect bonus points:
 - Full mark \rightarrow 3 bonus points.
 - 9 \rightarrow 2 bonus points.
 - 8 \rightarrow 1 bonus point.
 - 7, 6, 5 \rightarrow pass (but 0 bonus points).
 - 4, 3, 2, 1, 0 \rightarrow resubmit the assignment and 0 bonus points.

Guidelines for Assignments

- Respect the deadlines, no assignment after the deadline can receive a bonus point.
- The applied assignment should be in a non-proprietary format:
 - PDF, plain text, ODF, HTML or any other plain text based formats.
 - But not in doc, docx, ppt, pptx or any other Microsoft Office formats.

Marking System

- 6 marks that you collect from the assignments (the bonus points).
- 17 marks for the mid-term exam.
- 17 marks for the 2nd term exam.
- 60 marks for the final exam.

Formalities

- I prefer you to call me Amanj (not mamosta Amanj or kak Amanj).
- There is no absence system, it is your responsibility to help yourself to learn.
- The course is taught in English, but you can ask questions in Kurdish and Arabic.

Why Study this Course?

- Nowadays, most of the industries are affected by computers.
- Businesses are considering managing their information resource to be equal in importance to managing their key resources: property, facilities, equipment, employees and capital.

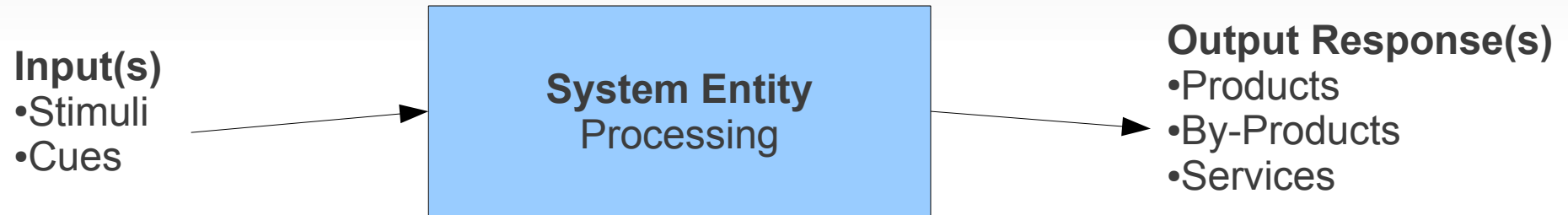
What is a System

- The term “system” originates from the Greek term *systema*, which means to “place together”.
- **System** An integrated set of interoperable elements, each with explicitly specified and bounded capabilities, working synergistically to perform value-added processing to enable a User to satisfy mission-oriented operational needs in a prescribed operating environment with a specified outcome and probability of success.

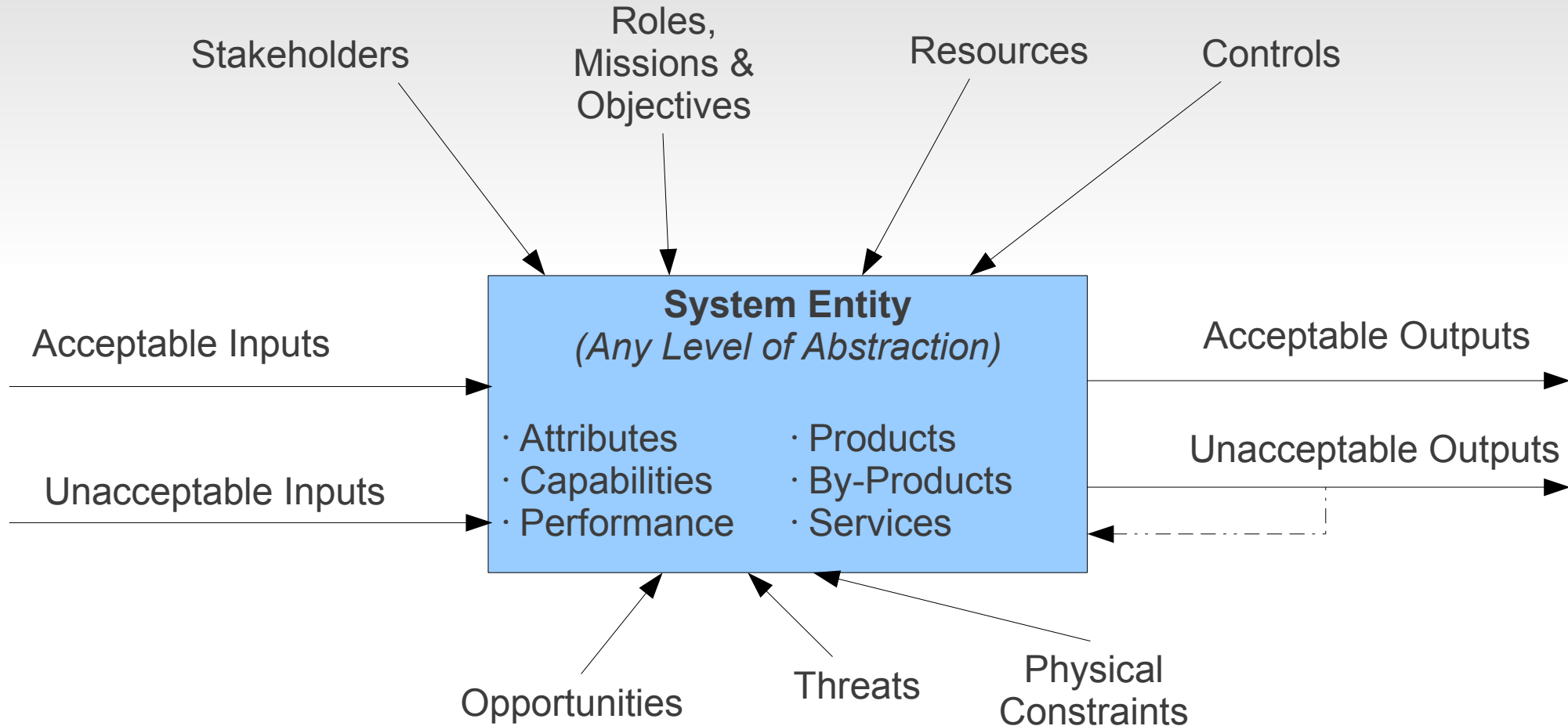
What is a System, *Cont'd*

- Basically there are three major components in every system: input, processing and output.
- In a system the different components are connected with each other and they are interdependent.

Basic System Entity Construct



Analytical System Entity Construct



What are System Analysis and System Design

- **System Analysis** is the study of a business problem domain to recommend improvements and specify the business requirements for the solution.
- **System Design** is the specification or construction of a technical, computer-based solution for the business requirements identified in a system analysis.

Stakeholders

- **System Owners:** are the information system's sponsors and chief advocates. They are usually responsible for funding the project to develop, operate, and maintain the information system.
- **System Users:** are the people who use or are affected by the information system on a regular basis –capturing, validating, entering, responding to, storing, and exchanging data and information. A common synonym is **client**.

Stakeholders, *Cont'd*

- **System Designers:** translate system users' business requirements and constraints into technical solutions. They design the computer files, databases, inputs, outputs, screens, networks and programs that will meet the system users' requirements.
- **System Builders:** construct the information system components based on the design specifications from the system designer. In many cases, the system designer and builder for a component are one and the same.

Stakeholders, *Cont'd*

- **Systems Analyst:** *facilitates* the development of information systems and computer applications.
- A **systems analyst** studies the problems and needs of an organization to determine how people, data, processes, communications, and information technology can best accomplish improvements for the business.
- **Business Analyst:** is a systems analyst that specializes in business problem analysis and technology-independent requirements analysis.

What Does a Systems Analyst Do?

- Identify the problem.
- Analyze and understand the problem.
- Identify solution requirements or expectations.
- Identify alternative solutions and decide a course of action.
- Design and implement the “best” solution.
- Evaluate the results. If the problem is not solved, return to Step 1 or 2 as appropriate.

The Ten Commandments of Computer Ethics

- Thou shalt not use a computer to harm other people.
- Thou shalt not interfere with other people's computer work.
- Thou shalt not snoop around in other people's computer files.
- Thou shalt not use a computer to steal.
- Thou shalt not use a computer to bear false witness.
- Thou shalt not copy or use proprietary software for which you have not paid.

The Ten Commandments of Computer Ethics, *Cont'd*

- Thou shalt not use other people's computer resources without authorization or proper compensation.
- Thou shalt not appropriate other people's intellectual output.
- Thou shalt think about the social consequences of the program you are writing or the system you are designing.
- Thou shalt always use a computer in ways that insure consideration and respect for your fellow humans.

Finally

- Lecture notes on course webpages.
- Assignment specifications on course webpages.
- The course webpage:
 - http://www.amanj.me/wiki/doku.php?id=teaching:su:system_analysis_and_design
- Course literature: Mainly: Ian Sommerville, “Software Engineering”, 8th edition (or newer).