Occupational English I
BLM3802

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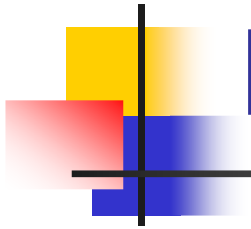
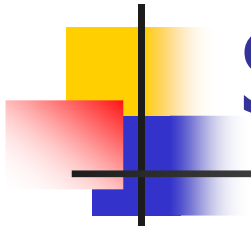


EXAMS

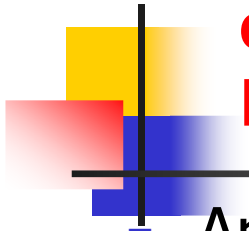
- Midterm 1 - %20
- Midterm 2 – In Class Presentations %40
- Final - %40



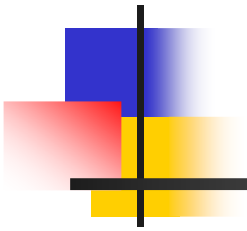
SCHEDULE

Occupational English I BLM3802		
Week	**Date**	**Content**
1	18.02.2015	Introduction
2	25.02.2015	Discrete Event System Simulation
3	04.03.2015	Cryptography
4	11.03.2015	Neural Networks
5	18.03.2015	No Class
6	25.03.2015	Presentation
7	01.04.2015	Presentation
8	08.04.2015	Midterm Exam
9	15.04.2015	Presentation
10	22.04.2015	Presentation
11	29.04.2015	Presentation
12	06.05.2015	Presentation
13	13.05.2015	Midterm Exam
14	20.05.2015	Presentation
15	27.05.2015	Presentation

In Class Presentations **Choose one of the following or offer your own subject by March 11th**

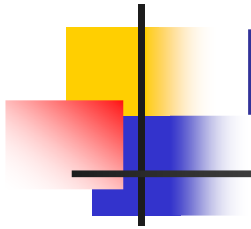


- Artificial Intelligence
- Information Retrieval
- Coding Theory
- Search & Sort Algorithms
- Data Structures
- Dynamic Programming
- Network Security
- Operating Systems
- Formal Languages&Abstract Machines
- Turing Machines



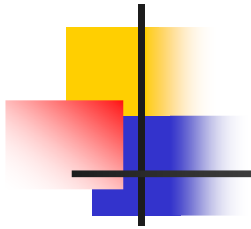
Discrete-Event System Simulation

An Introduction to the Basic Principles of Simulation



Modeling

- Modeling involves observing a system, noting the various components, then developing a representation of the system that will allow for further study of or experimentation on the system
- Focus – computer model
  - Data Structures & Implementation
  - Interaction of the components



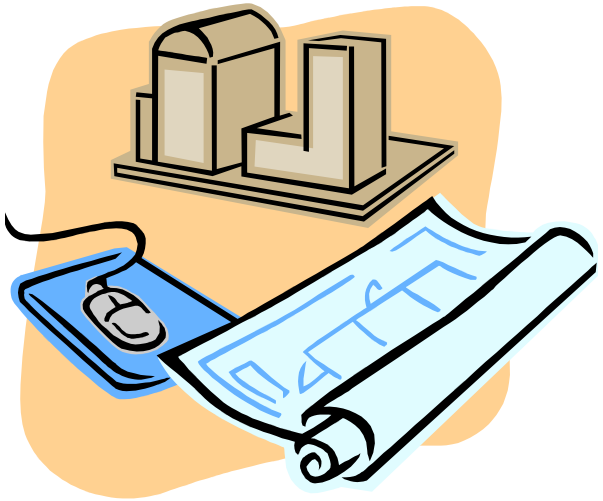
Simulation

The process of running a (computer) model of a real system to study or conduct experiments

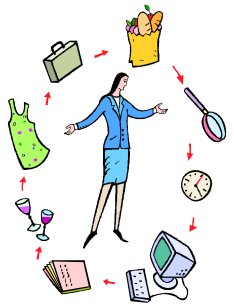
- For understanding the model or its behavior
- To evaluate strategies for operation of the system
- Involves generation of an artificial history, used to draw conclusions about the real system

Modeling & Simulation

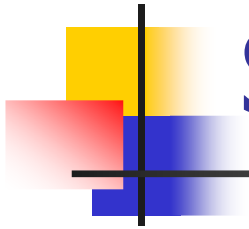
- Often described as one process
- Should distinguish between the two



System

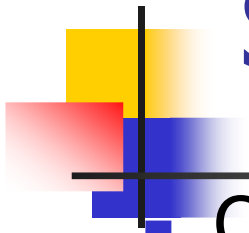


- A set of inputs which pass through certain processes to produce outputs
- A set of related components which work together toward a given goal
- A group of objects joined in regular interactions or interdependence for the accomplishment of some purpose
  - Helpful if a system is observable, measurable, systematic



System Environment

- "World" in which the system exists
- System is affected by elements outside the system – the system environment
- Boundary – "line" between the system & its environment
- Decision on boundary is dependent upon simulation purpose

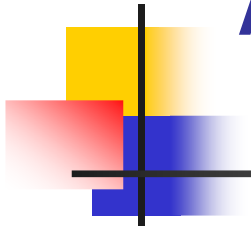


System Components

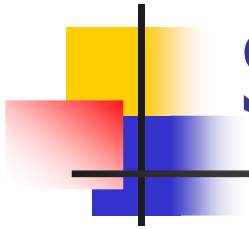
- Consists of objects called ENTITIES
- Entities have a set of properties called ATTRIBUTES that describe them
- There exist interactions called ACTIVITIES and or EVENTS that occur between the entities that cause them to change
- The STATE OF A SYSTEM is a snapshot of the system at a given time

  i.e. variables necessary to describe system
- The model starts in its INITIAL STATE

Activities & Events



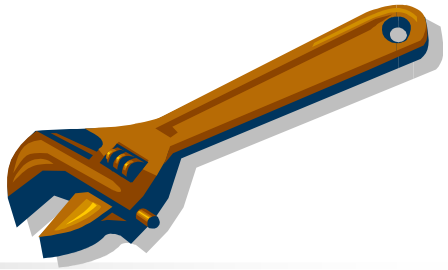
- Cause changes in the attributes of the entities, and, therefore, the state of the system
- Event: instantaneous
- Activity: has a length of time



System Component Examples

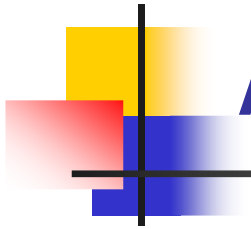
- Bank
- Computer Network
- Hospital Emergency Room

Simulation as the Appropriate Tool



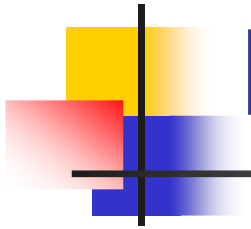
- Enables study and experimentation
- Changes simulated & results observed
- Gain knowledge of system
- Determining importance of variables and how variables interact
- Experiment before implementation
- Verify analytic solutions

Simulation as the Appropriate Tool (cont'd.)



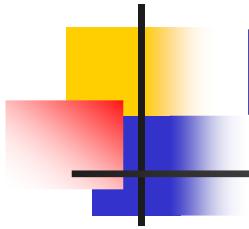
- Try different capabilities (of a machine)
- Training
- Animation (graphics)
- Complexity of modern systems almost require simulation

When Simulation is Not Appropriate



- If can be solved by
  - Common sense or simple calculations
  - Analytical methods
  - Direct experiments
- If simulation costs exceed savings
- If resources & time are not available

When Simulation is Not Appropriate (cont'd.)



- If Data is not available
- If verification & validation are not practical due to limited resources
- If users have unreasonable expectations
- If system behavior is too complex