

# IDENTIFY THESE ACRONYMS

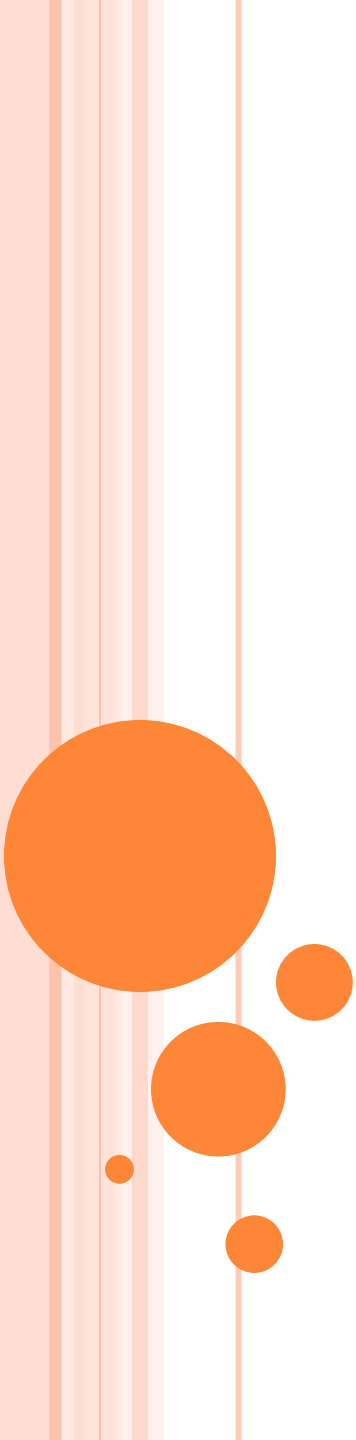
1. IT
2. BLT
3. SSADM
4. RAM
5. MPH
6. MP3
7. DFD
8. IQ
9. 4GL
10. ERD



# ACRONYMS

1. IT Information Technology
2. BLT Bacon, Lettuce & Tomato
3. SSADM Structured Systems  
Analysis & Design Method
4. RAM Random Access Memory
5. MPH Miles Per Hour
6. MP3 MPEG-1 audio layer 3
7. DFD Data Flow Diagram
8. IQ Intelligence Quota
9. 4GL 4<sup>th</sup> Generation Language
10. ERD Entity Relationship Diagram





# UNIT 11: SYSTEMS ANALYSIS & DESIGN

## SSADM Tools & Techniques Overview

# LEARNING OUTCOMES

- Task 1 - Principles of systems analysis & design
- Produce a report describing the developmental methodology SSADM. Ensure that you describe the features of this methodology, including the advantages and disadvantages of using it.
- Your report should examine the different analysis tools used within this approach and how they could be employed to analyse the Scenario



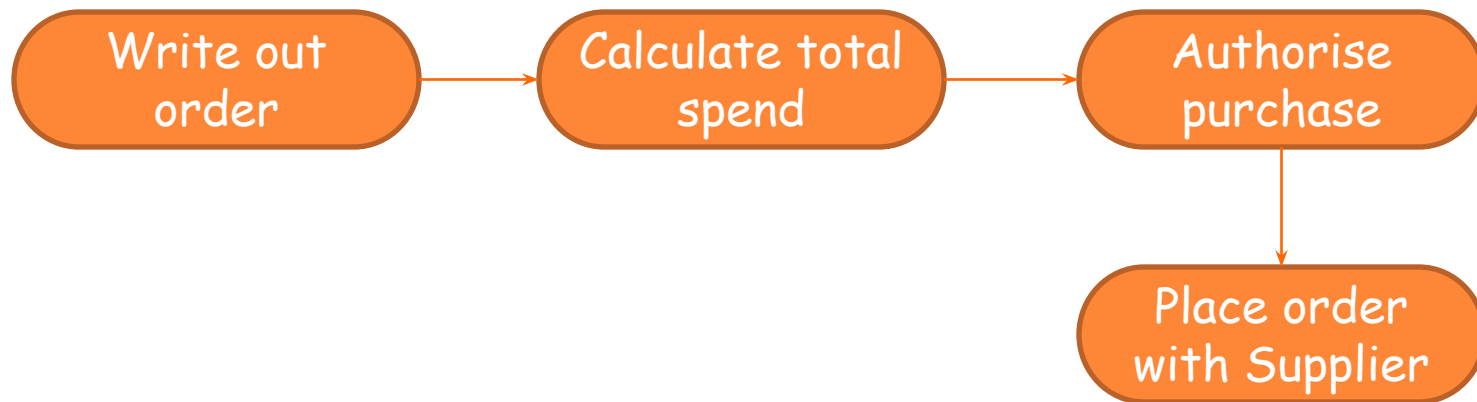
# TYPICAL TOOLS AND TECHNIQUES USED IN SSADM

- Activity diagrams
- Context diagrams
- Data Flow Diagrams
- Entity relationship diagrams
- Computer-aided software engineering (CASE) tools
- Data dictionaries
- Process descriptors (decision tables, flow charts, structured English)



# ACTIVITY DIAGRAMS

- ❑ **Purpose** - to represent the actions of a process
- ❑ For example, the production manager asks a purchasing administrator to place an order for a larger amount of raw materials
- ❑ Basic activity diagram for purchase order



# ACTIVITY DIAGRAMS - TASKS

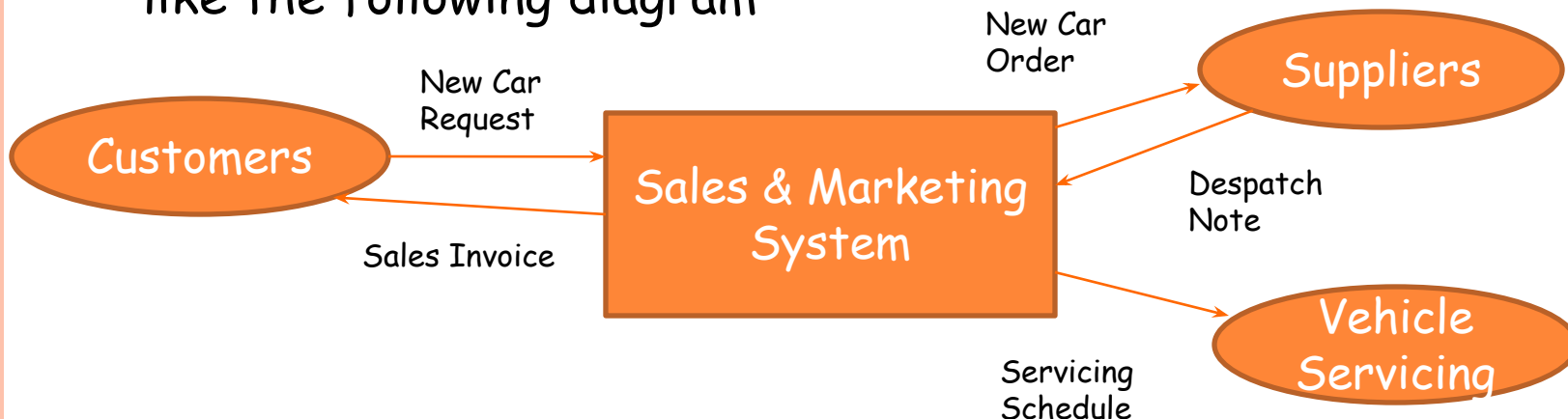
□ Create activity diagrams for the following examples;-

1. Making a cup of tea
2. A customer coming into a garage and asking a salesman for a new car
3. Students being enrolled onto a course
4. The sales manager asks a sales clerk to place an order for more cars



# CONTEXT DIAGRAMS

- ❑ **Purpose** - to represent the system as a single process, all flows into and out of the system are shown around the edges of the process
- ❑ This ensure that the boundaries are correct and well understood
- ❑ For example, a context diagram for the sales and marketing system for North East Motors Ltd might look like the following diagram



# CONTEXT DIAGRAMS - TASKS

- Create context diagrams for the following examples;-
  1. A customer bring a car into a garage for service
  2. Students being enrolled onto a course (entity are students, tutors)
  3. The sales manager asks a sales clerk to place an order for more cars



# DATA FLOW DIAGRAMS (DFD)

## □ Purpose :-

- To represent the information flows of a system
- The diagrams represent the external agents sending and receiving information; the processes that change information; the information flows themselves; and where information is stored
- They are used in the early stages in systems analysis to help understand the present system
- They are used to represent the required system and are used as the basis for program specification



# DATA FLOW DIAGRAMS (DFD)

- For example, the production manager asks a purchasing administrator to place an order for a larger amount of raw materials
- This diagram presents the same process but in more detail



# ENTITY RELATIONSHIP DIAGRAMS (ERD)

- Also referred to as a Logical Data Model or Logical Data Structure
- **Purpose :-**
- These diagrams describe what information should be held by the system
- They show how all of the data items in a system relate to each other



# ERD DIAGRAMS - TASKS

- Create Entity Relationship Diagrams for the following examples;-
  1. A customer buying a new car from a garage
  2. Borrowing a book from the library



# DATA DICTIONARIES

- ▣ **Purpose** - the data dictionary is a formal record of what fields will be created to hold the data of an entity
- ▣ For example, if the entity was a **book** a library might want to store the following information

| Attribute Name      | Entity | Data Type | Description                   | Format or Length | Validation/Input Mask |
|---------------------|--------|-----------|-------------------------------|------------------|-----------------------|
| Book Title          | Book   | Text      | Title of book                 | 50 characters    | Upper case            |
| Edition Number      | Book   | Integer   | Edition number if appropriate |                  |                       |
| Genre               | Book   | Text      | Book category e.g. Children   | 25 characters    |                       |
| Author(s)           | Book   | Text      | Names of all authors          | 100 characters   |                       |
| Publisher           | Book   | Text      | Name of publisher             | 25 characters    |                       |
| Year of Publication | Book   | Integer   | Year only, e.g. 2007          |                  | > 1980                |



# DECISION TABLES

- ❑ **Purpose** - A decision table is used to represent a process where a number of different actions may be taken, dependent on a range of conditions
- ❑ It allows the analyst to record all the possible conditions that might occur, and define a suitable action or response
- ❑ For example, the decision table below represents all the conditions that need to be tested and the actions that could be taken when a borrower requests a book from a library

|           |                      | A | B | C | D |
|-----------|----------------------|---|---|---|---|
| Condition | Is a library member? | Y | Y | N | N |
| Condition | Book is in stock?    | Y | N | Y | N |
| Action    | Loan book            | Y | N | N | N |
| Action    | Record loan          | Y | N | N | N |
| Action    | Refuse loan          | N | Y | Y | Y |



# DECISION TABLES - TASKS

- Create Decision Table for the following example;-
  1. The process you go through while making yourself a cup of tea



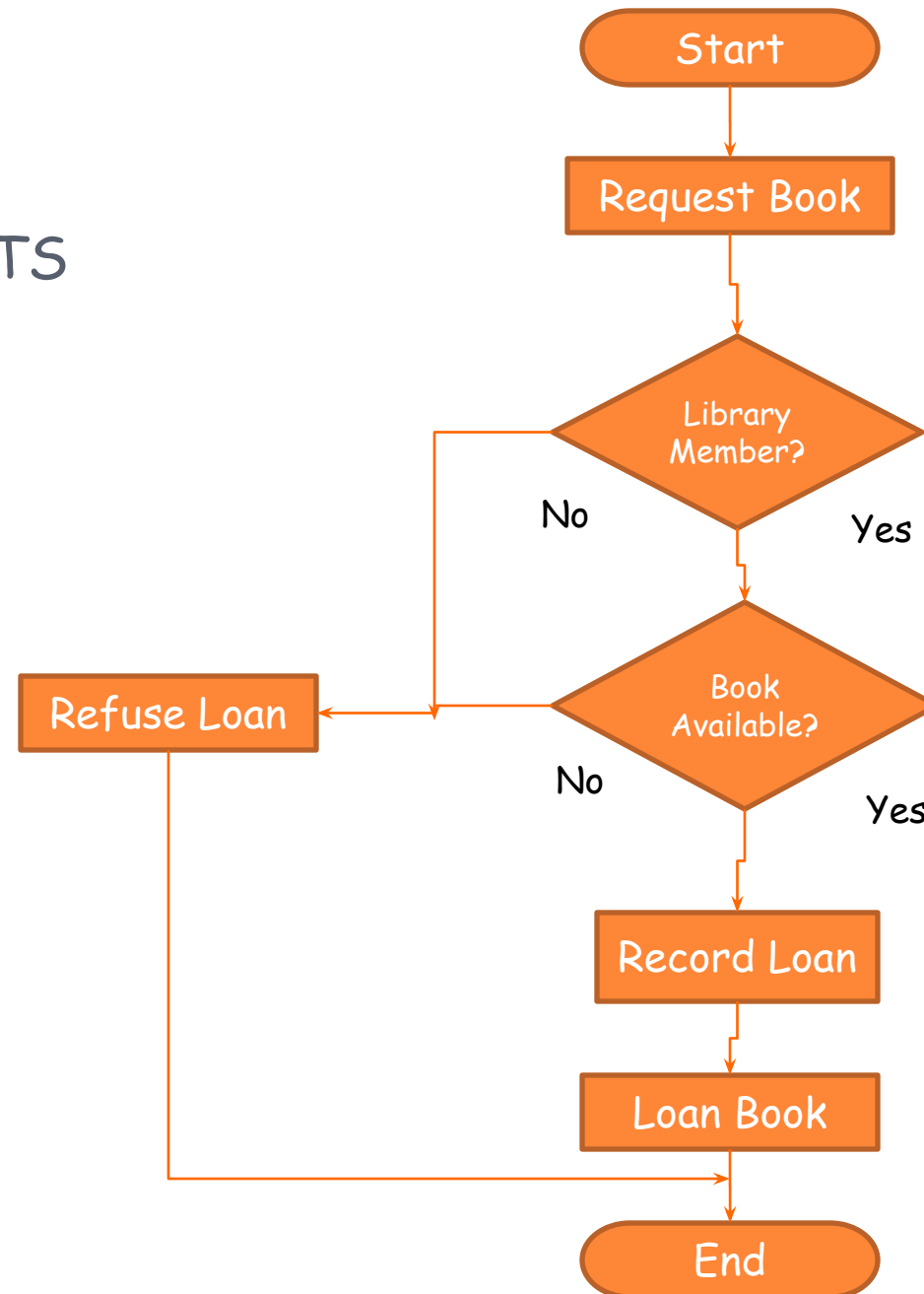
# FLOW CHARTS

## □ **Purpose :-**

- A flow chart shows how steps in a process fit together and are controlled
- This makes them useful tools for communicating how processes work, and for clearly documenting how a particular job is done
- By mapping a process out in flow chart format, you clarify your understanding of the process, and it helps you think about where the process can be improved.
- For example, we can represent the library system as a flow chart, if we take the decision table and represent it as a process it will look like the following diagram



# FLOW CHARTS



# FLOW CHART- TASKS

- Create Flow Chart for the following example;-
  1. The process you go through while making yourself a cup of tea



# STRUCTURED ENGLISH

- **Purpose** – to give the analyst the ability to represent a process as a basic program, the process is described and laid out in the way it will ultimately appear in code, but without using any programming terminology
- This is often called pseudocode
- To represent the process described in the flow chart, the structure English would look as follows:
- Maintain Loans Process Example

Write: Is a member?

Check: If Yes

Write: Is book available?

Check: If Yes

Record Loan

Else

Write: Refuse Loan

Else

Write: Refuse Loan



# STRUCTURED ENGLISH- TASKS

- Create Structured English for the following example;-
  1. The process you go through while making yourself a cup of tea



# NON-DIAGRAMMATIC TECHNIQUES

- Relational data analysis
- Requirements definition
- Function definition
- Formulation of options
- Specification prototyping



## USEFUL WEBSITES

- [http://www.cs.uct.ac.za/mit\\_notes\\_devel/SE/Latest/html/ch02s07.html](http://www.cs.uct.ac.za/mit_notes_devel/SE/Latest/html/ch02s07.html)
- <http://www.comp.glam.ac.uk/pages/staff/tdhutchings/chapter4.html>

