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^{th} 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.

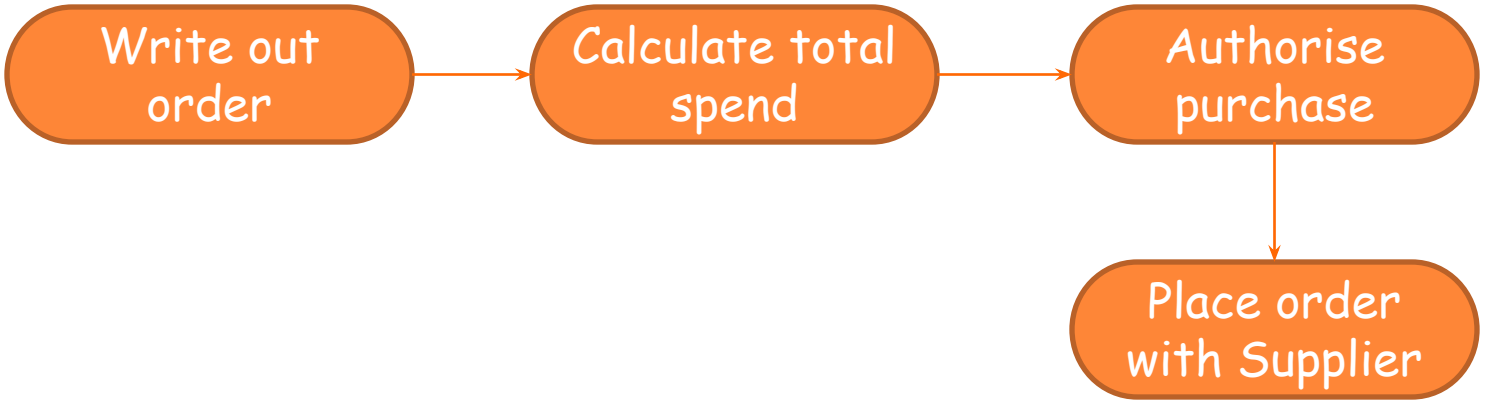
- Your report should examine the different analysis tools used within this approach and how they could be employed to analyse the Scenario

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



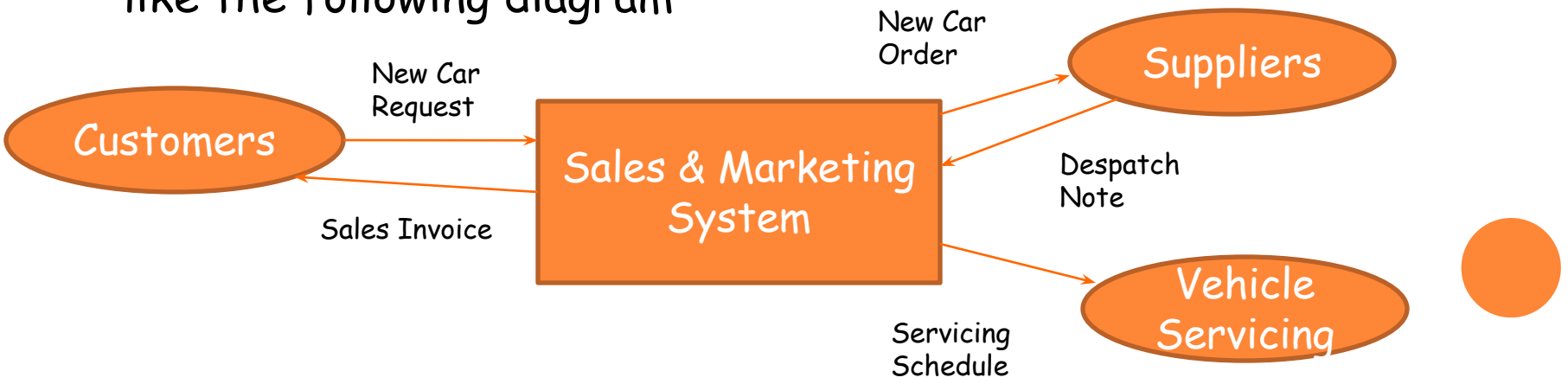
Activity Diagrams - Tasks

- 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

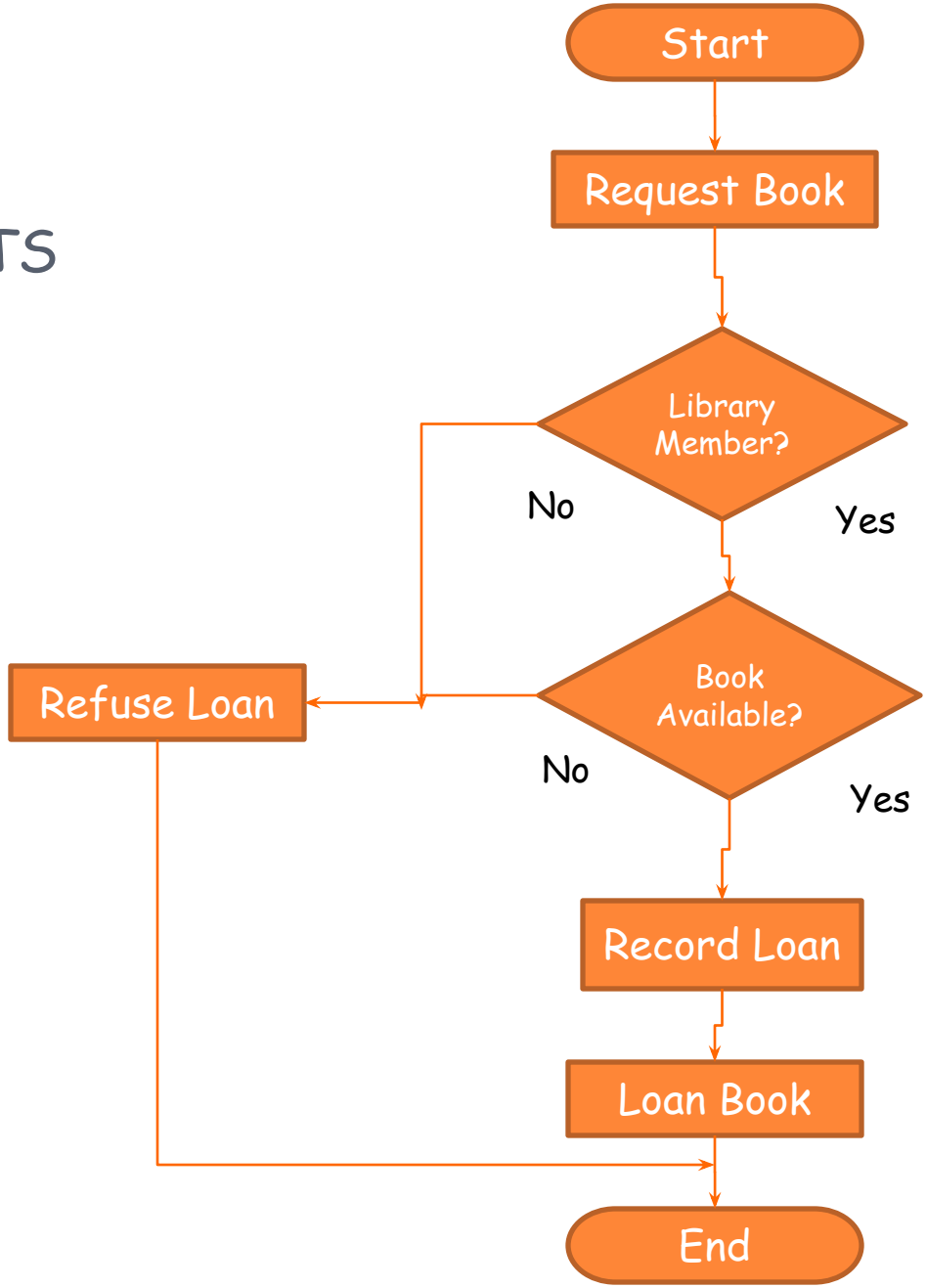
- Create Decision Table for the following example;-

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


Start
Request Book
Library Member?
No
Yes
Refuse Loan
Book Available?
No
Yes
Record Loan
Loan Book
End

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.comp.glam.ac.uk/pages/staff/tdhutchings/chapter4.html