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# Writing Formal Reports

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ICOM 5047

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# Why?

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- Flow of information.
  - Management is impossible without flow of information.
  - Make decisions.
    - Need relevant facts.
- Constructed in an useful way.

# Report Components

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- Abstract or Summary
  - Executive Summary
- Introduction
- Discussion or Body of the Report
- Conclusions
- Future Work or Recommendations
- Appendix
- References or Bibliography

# Contents (More)

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- Cover
- Title page
- Table of contents
- List of figures
- List of tables
- Glossary

# Cover and Title page

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- Cover
  - Nice
- Title page
  - Title of report
  - Name of organization
  - Name of people who wrote the report
  - Date
  - Report number
  - (Section, course)
  - Dignified

# Example

University of PR, Mayaguez Campus  
Electrical and Computer  
Engineering Department

Title here  
By  
Nayda G. Santiago



For: Fernando Vega  
Course: ICOM 5047, section 030 (031)  
Date: Sept 20, 2008

# Abstract or Summary

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- Purpose – contain the substance of the report
  - Busy reader can grasp the contents
  - Author – grasp of central idea
- Summary of purpose, main results, and findings
- Written at the end
- Types
  - Indicative
  - Informative
  - Indicative-informative

# Types of abstracts

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- Indicative
  - Main subject of the document
  - Qualitative description
  - Simple vocabulary
- Informative
  - Point out discoveries
  - Quantitative description
  - Technical
- Informative-indicative
  - Combination



# Executive Summary

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- Readers of the report are busy people.
  - Do not have time to go through the report page after page to find what is valuable for them.
- Purpose
  - Set out the substance of the report briefly in such way that busy readers can see at glance whether the report is relevant to them.
- Should not exceed one page.

# Table of contents

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- How to find information
- How material has been organized
- Important
  - Headings exactly as they appeared in text
  - Appendixes must be included
  - If too many headings
    - Include only main ones
- List of figures and List of Tables
  - If necessary

# Introduction

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- Prepares the reader
- Main components
  - Background
  - Purpose
  - Scope
- Other components
  - Problem Statement
  - Main contribution
  - Reference to technical contents

# Body of the report

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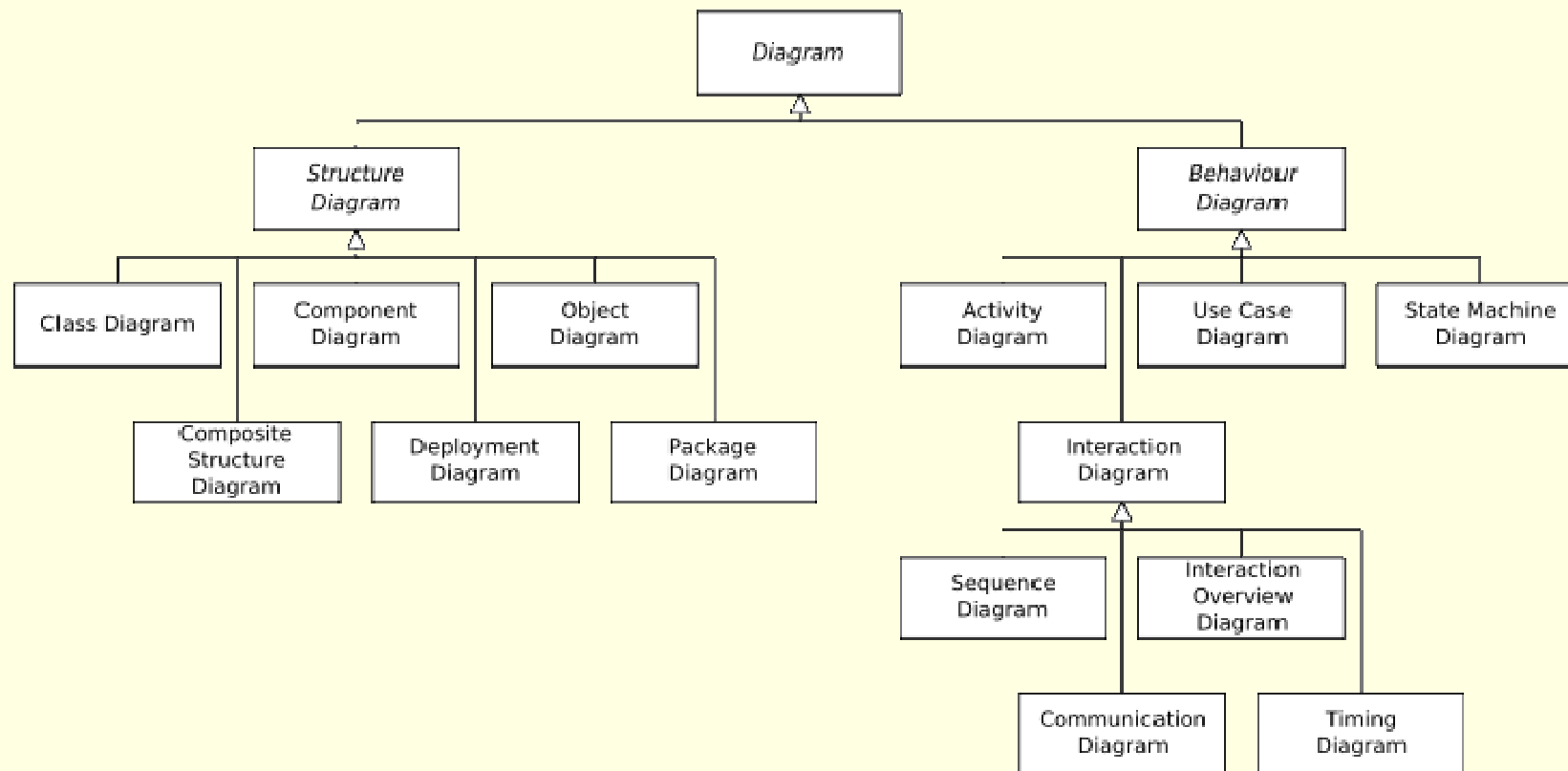
- Theoretical Background
- Discussion
- Detailed account of the work or research performed
- Organized
- Consider the audience for vocabulary
  - Over or under estimate reader
- Divided in sections
  - Appropriate title
    - No Discussion as title
- Include tables, charts, figures

# System Description

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- Composition Structure and Block Diagram
  - In hardware: Block diagram
    - Describe components and their interconnection
  - In software: Structure diagram
    - UML
    - Class diagram
      - Component
      - Object
      - Structure

# UML (From Wikipedia)



# System description

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- Dynamic structure
  - Changing behavior of the system
    - Time
- **UML**
  - **Sequence Diagram**
    - Displays the time sequence of the objects participating in the interaction.
    - This consists of the vertical dimension (time) and horizontal dimension (different objects)

# System description

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- Entity relationship diagrams
  - Visualize different sets of entities, each being of a certain type
    - Defined by a set of attributes
    - Arrows represent relations
  - UML
    - **Component Diagram**
    - Displays the high level packaged structure of the code itself.
    - Dependencies among components are shown, including source code components, binary code components, and executable components.
    - Some components exist at compile time, at link time, at run times well as at more than one time



# Tables and Figures

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## ■ Illustrations

- Must serve a purpose
- Supplement not duplicate information
- Referred to in the text
- Clear and simple to understand
- Caption and figure or table number
- Smaller than page
  - If full page, read from right
- Don't scan tables or figures or copy from web page. Draw them.

# Conclusions

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- Analyze
- Provide suggestions
- Future work
- Summarize (don't overdo it)
- Reasoning

# Appendix

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- Detailed descriptions
- Derivations
- Lengthy tables
- Data
  - Manufacturer data
  - Data sheets
- Complex analysis
- Information that might interrupt the flow of the report.
- Must appear in the order cited in the document
- Assign a letter to appendix and a title

# References or Bibliography

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- References

- Where did we get the information for the report
  - Please, no web pages if possible

- Bibliography

- Reading material
  - Might not have been used to prepare the report

# References

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- Essential
  - Author
  - Title
  - Publisher, publication
  - Year, date, month
- Style
  - Use the same style as the people in your field
  - Read and you will learn the style

# Plagiarism

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- Written material must be original
  - Do NOT copy material (cut and paste) from any source
  - If so, use quotes and reference the material

## **PLAGIARISM!**

**Plagiarism is a form of academic dishonesty punishable by expulsion.**

# Comparison and Contrast

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- Ascending order
  - Most likely to adopt, last
- Descending order
  - Most likely to adopt, first

# Cognitive Mapping / Mind Maps

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- *Definition:* The representation of a person's reality as a "cognitive map" consisting of nodes and edges (linkages). Nodes are used to represent the person's concepts, including events, actions and values, and the edges are used to represent perceived causal relationships. Using a cognitive map, one can identify idea chains or explanatory paths.

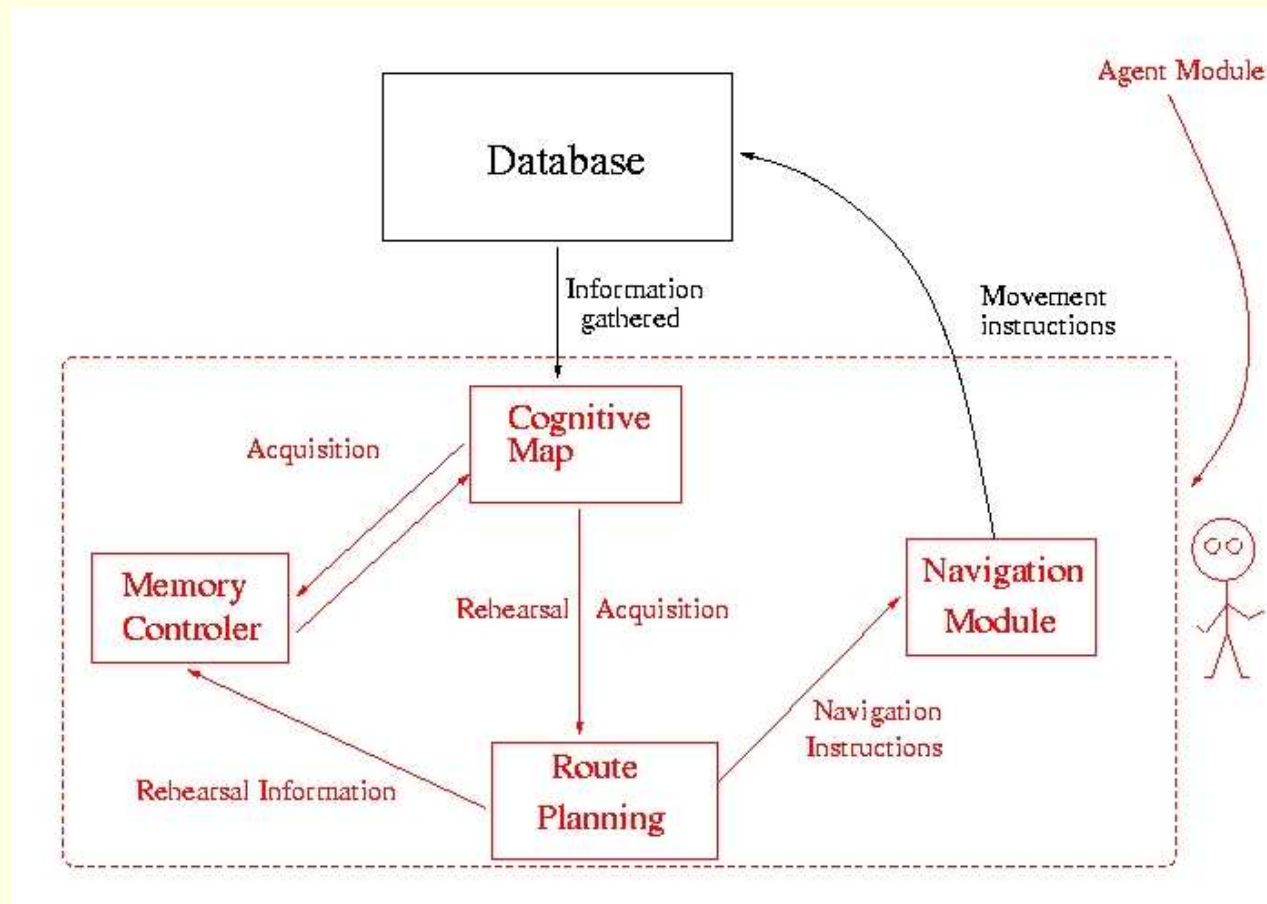


# Construction of Cognitive Maps

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1. Code the text by identifying the concepts and the explicit or implicit causal linkages between them.
2. Construct a concept dictionary.
3. List relationships between concepts.
4. Draw the cognitive map.

# Example



# Hints

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- Use diagrams
- Have one person read the report at the end and oversee the overall structure
- Enumerate pages and create table of contents
- Write when you have something to write
- Write body first, abstract last

# References

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- Blicq, Ron S., Writing Reports to Get Results: Guideline for the Computer Age, IEEE Press, 1987.
- Lloréns, Baldomero, Class notes ELEG 4165, Univ. of Puerto Rico at Mayagüez, 1991.
- Michaelson, Herbert B., How to Write & Publish Engineering Papers and Reports, 3rd Edition, Oryx Press, 1990.
- Pringle, Alan S., O'Keefe Sarah S., Burns, Bill, Technical Writing 101 : A Real-World Guide to Planning and Writing Technical Documentation, Scriptorium Press, 2000

# Questions?

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- [http://www.ece.uprm.edu/~nayda/Report\\_Format.pdf](http://www.ece.uprm.edu/~nayda/Report_Format.pdf)