

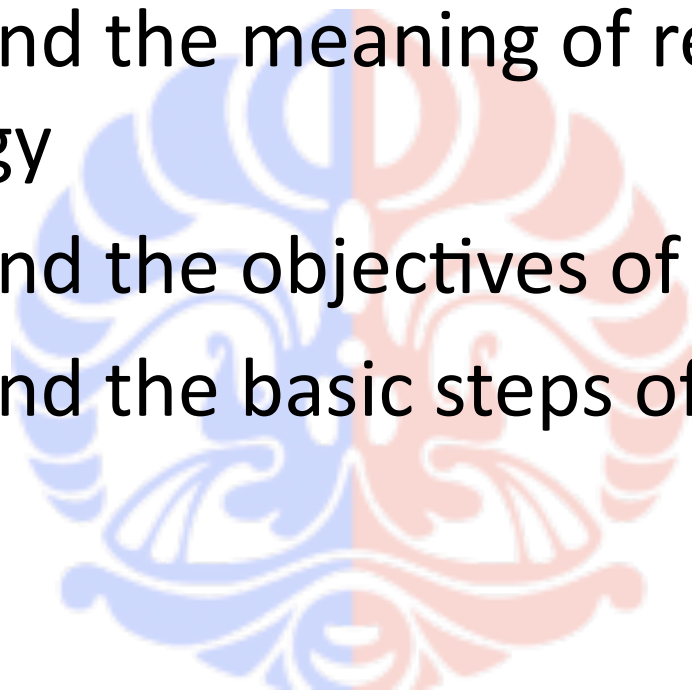
# **RESEARCH METHODOLOGY IN COMPUTER SCIENCE AND INFORMATION TECHNOLOGY**

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**RESEARCH METHODOLOGY  
STUDY PROGRAM: MAGISTER INFORMATION  
TECHNOLOGY  
COMPUTER SCIENCE FACULTY, UNIVERSITY OF  
INDONESIA**

# Session Objectives

- To understand the meaning of research
- To understand the meaning of research methodology
- To understand the objectives of research
- To understand the basic steps of conducting research



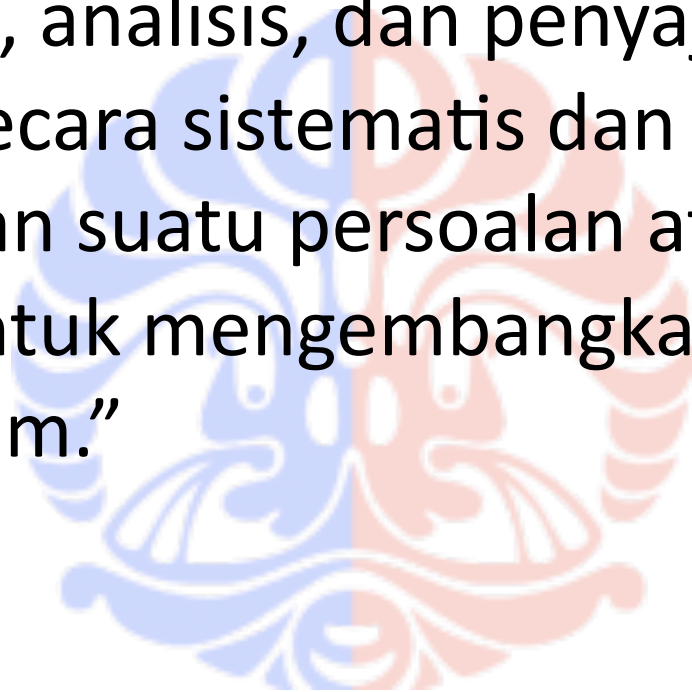
# Agenda

- Definition of Research
- Definition of Methodology
- Definition of Research Methodology
- The Aims of Research
- Basic Steps to Conduct Research



# Pengertian Penelitian (Research) Menurut KBBI

- Penelitian adalah..... “Kegiatan pengumpulan, pengolahan, analisis, dan penyajian data yang dilakukan secara sistematis dan objektif untuk memecahkan suatu persoalan atau menguji hipotesis untuk mengembangkan prinsip-prinsip umum.”



# What is Research?

⦿ Research is:

“...the systematic process of collecting and analyzing information (data) in order to increase our understanding of the phenomenon about which we are concerned or interested”

# More Understanding on What is Research ?

- Research is a careful and systematic process of inquiry to find answers to **problem** of interest.
- Research include: use of **facts**, use of **theories**, data (fact) **analysis**, sampling, doing an experiment, going to library to read up on a topic
- To do 'research' is to **investigate the problem** systematically and thoroughly
- Goal of research is to solve '**problem**' of interest

# Research Characteristics

1. Originates with a question or problem.
2. Requires clear articulation of a goal.
3. Follows a specific plan or procedure.
4. Often divides main problem into subproblems.
5. Guided by specific problem, question, or hypothesis.
6. Accepts certain critical assumptions.
7. Requires collection and interpretation of data.
8. Cyclical (helical) in nature.

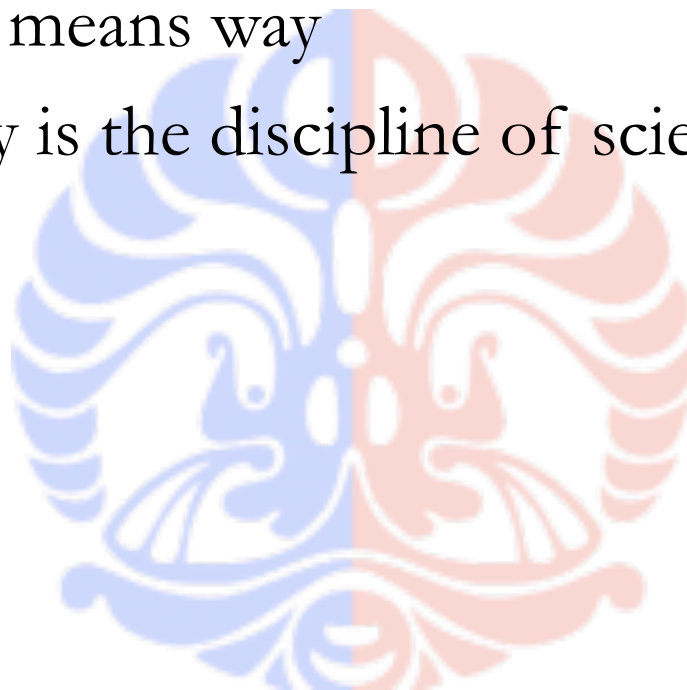
# The Aims of Research

- \* To describe about a phenomena
- \* To predict about “something” in the future
- \* To explain about solution of problem
- \* To interpret what is being investigate



# Scientific Methods

- ① “Methodos” means way
- ① Methodology is the discipline of scientific procedures



# Pengertian Metodologi (Kamus Ilmu Pengetahuan)

- Metodologi adalah.... “Ilmu tentang metode; Uraian tentang metode.”
- Ilmu tentang metode-metode, prosedur-prosedur, prinsip-prinsip yang digunakan dalam disiplin keilmuan;
- Cabang logika yang merumuskan atau menganalisis prinsip-prinsip yang diperlukan untuk membentuk kesimpulan dan konsep yang logis

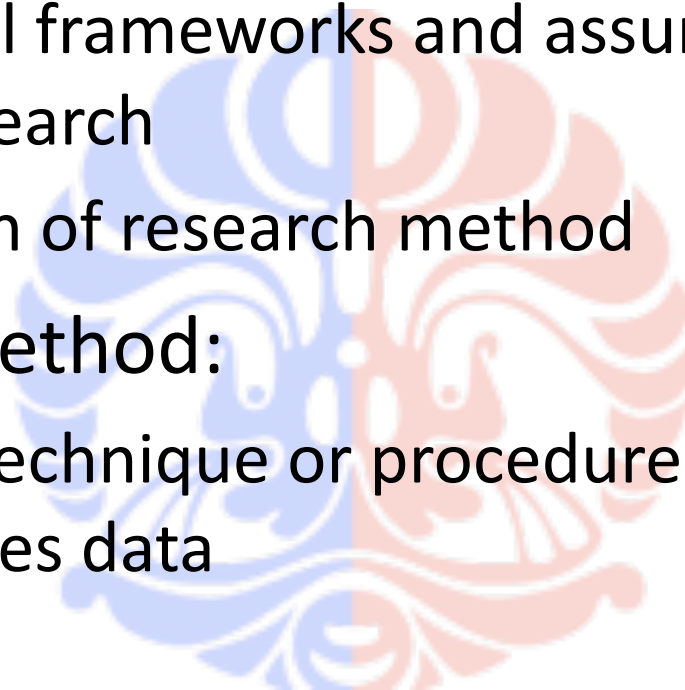
# What is Methodology ?

- A formalized approach to conduct research
  - A series of steps and deliverables
- Research Methodology In Computer Science/ Information System/Information Technology (CS/IS/IT)

“A collection of methods, procedures, techniques, tools and documentation aids which will help the researcher in their efforts to conduct a research in the field of CS/IS/IT”.

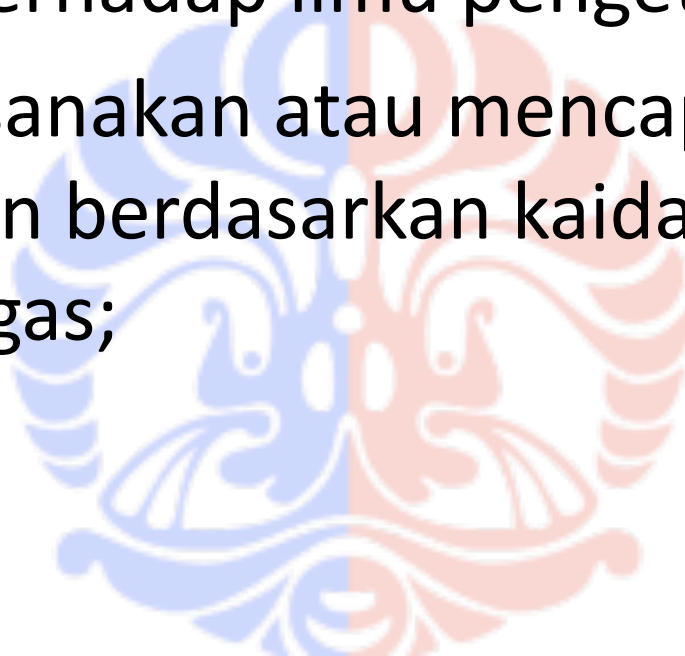
# Research Methodology Vs. Research Method

- Research Methodology:
  - Conceptual frameworks and assumptions used to inform research
  - Elaboration of research method
- Research Method:
  - Research technique or procedure used to gather and analyses data



# Method (Metode)

- Kaidah-kaidah dasar untuk melakukan penelitian terhadap ilmu pengetahuan;
- Cara melaksanakan atau mencapai ilmu pengetahuan berdasarkan kaidah-kaidah yang jelas dan tegas;



# Research Methodology

- ① A research methodology will consist of phases, sub-phases, which will guide the researchers in their choice of the methods, techniques, procedures, tools, etc., that might be appropriate at each stage of the research and also help them plan, manage, control and evaluate the progress of research.
- ① A research methodology represents a way to develop research systematically.
- ① A research methodology represents a way to do scientific inquiry.
- ① A research methodology should have a sound theoretical basis.

# Why Methodology ?

- It will make you better able to understand and utilize scientific information in both your personal life and your work.
- It will make you a more literate and cultured person.
- It provides you some insight not only into particular scientific findings but also into the general nature of science as a human activity.

# Nature of Research in CS/IS/IT

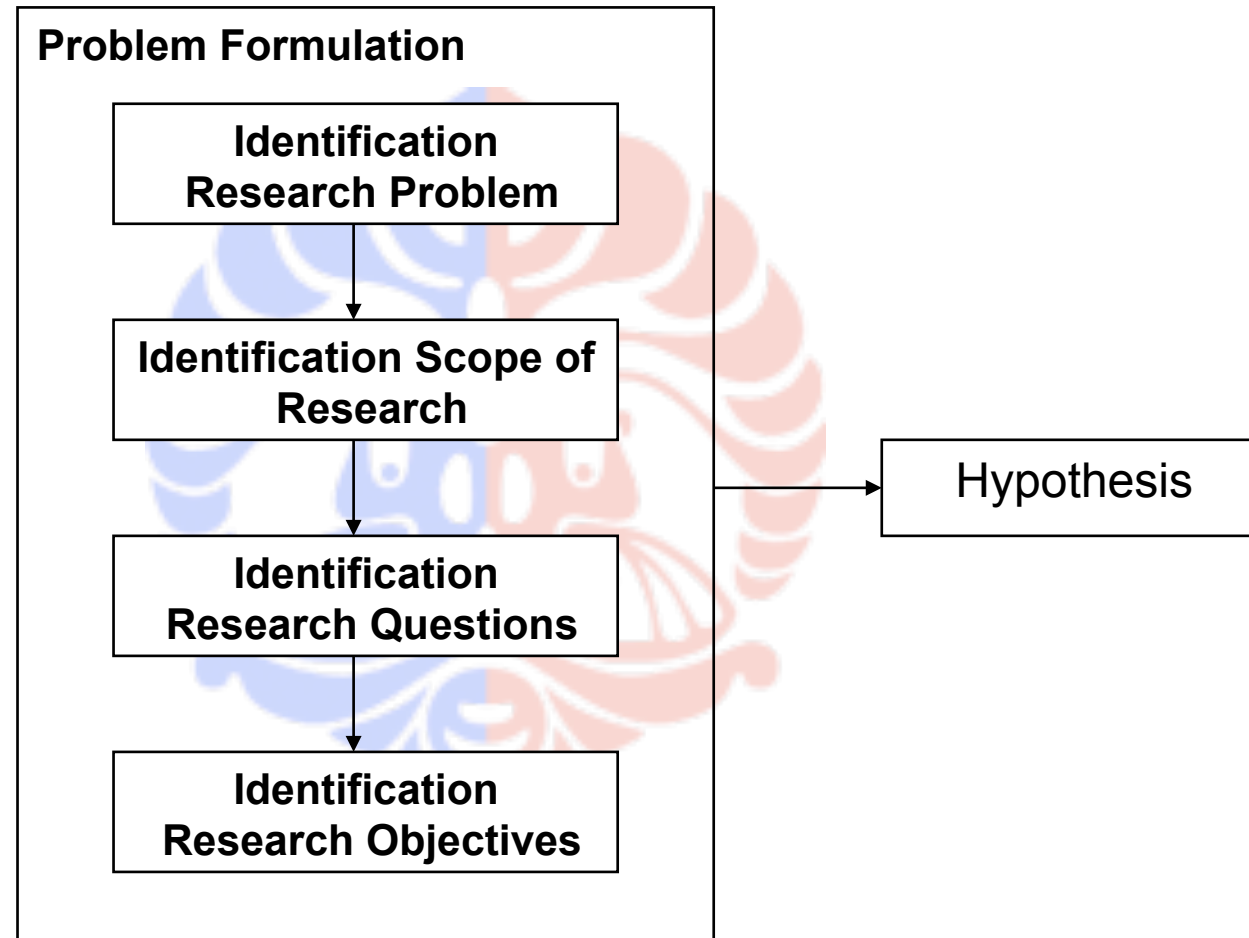
- Research in CS often requires experimental design as well as theoretical (basic) research
  - Hence, we have to have a methodology in order to conduct research CS
  - *Science approach :new knowledge, theory*
- Research in IS/IT often requires system development
  - Hence, we have to have a methodology in order to develop a system (IS/IT system)
  - *Engineering approach: construction of useful products*
- This IS/IT Development Methodology can be used as a Research Methodology in IS/IT field.



# How to Start A Research?

- Determine a well define problem
  - Understanding about something
    - Science approach: phenomena, theory, hypothesis, experiment..
  - Constructing product
    - Engineering approach: build a system that perform a (unique) task, experiment, convergence results (stable)..
- Follow the steps in the research methodology
- Research results: knowledge, algorithm, methods, product (system), model, etc...

# Problem Formulation



# Q/A



## TIP

If you don't  
understand  
something

**ask**

**me!**