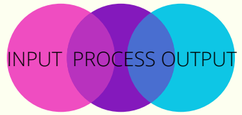
NUR SYAMALIA
FAIQAH BINTI
MOHD KAMAL

INTRO Algorithm & Data Structure

PROGRAMMING PARADIGM

PROGRAMMING PRINCIPLE

Challenges to create a good solution
- Create a good set of modules that
  - must store, move, and alter data
  - use algorithms to communicate with one another
- Organize your data collection to facilitate operations on the data in the manner that an algorithm requires



PROBLEM SOLVING

Taking statement of problems & develop solution

consist of modules
A single, stand-alone function
A method of a class
A class
Several functions or classes working closely together
Other blocks of code

Function & Method

- step-by-step recipe for performing a task within a finite period
- operate on a collection of data, stored in Data Structure
- Problem solving using logic

Algorithm creation techniques
- Flowchart, pseudo code,structure chart language etc

Factors for measuring good algorithm
- Running time
- Total memory usage

types of basic control structure

ALGORITHM

a sequence of instructions

Characteristics

Finite solution (ada penamat)
Clear instructions (jelas)
Has input to start the execution
Has output as the result of the execution
Operate effectively
(dilaksana dengan berkesan)

7 KEYS ISSUES IN PROG

Use through:
- Named constants
- The typedef statement

Types
·**Open-box(white-box or glass-box)testing**
=Test knowing the implementation
= Test all lines of code (decision branches, etc.)
· **Closed-box(black-box or functional)testing**
=Test knowing only the specifications

interactive environment, input clear manor & output labeled, easy to read

- Test for invalid input data and program logic errors
- Enforce preconditions
- Check argument values

SOFTWARE ENGINEERING

PROVIDES TECHNIQUES TO FACILITATE THE DEVELOPMENT OF COMPUTER PROGRAM

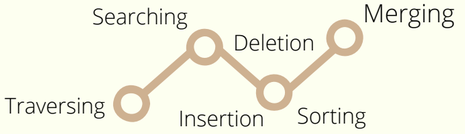
PHASES SOFTWARE DEVELOPMENT

Provide a very systematic and organized approach for developing software.

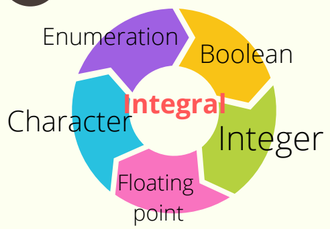
DATA STRUCTURE

storing data efficiently
chosen data structure allow efficient algorithm to be used
well-designed data structure allows critical operations to be performed, using as few resources, both execution time and memory space

Operation



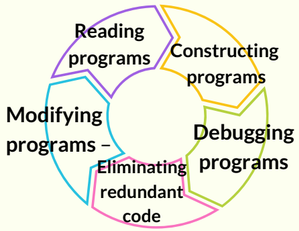
Opeation to DS (c++)



Structured Data Type

STORAGE STRUCTURE
- array
- structure (struct)

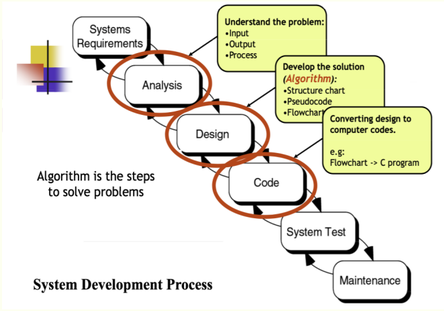
STATE STRUCTURE
- queue (FIFO)
- stack (LIFO)



Key issues modularity

KEY ISSUE IN STYLE
- Use of private data members
- Proper use of reference arguments
- Use of methods to reduce coupling
- Avoidance of global variables in modules(encapsulation)
- Error handling
- Readability
- Documentation

LINKED STRUCTURE
- unsorted link list (A linked list with no ordering)
- sorted link list
  -Data stored in ascending or descending order with no duplicates
  -Insertion at front, middle or rear of the list n
  -Deletion will not affect the ascending/descending order
- network (DIRECTED GRAPGH & represent route)
- binary tree (representing the hierarchical)
- graph



TOOLS DEBUG

Watches
Dump functions
Single
cout statements
Breakpoints
Stepping