DATA IDENTIFIER TABLE

- In pseudocode, 8-9 mark questions, if variables are already specified in the question, then there is no need to declare them.

- constitutes of 3 things:

1. List of variables
2. Explanation of what that variable does
3. Data type of that variable.

LOV	Description	Data type
MyProject	stores status of project (True or False)	Boolean

DATATYPES → A classification attributed to an item of data

6. DATE : DD/MM/YYYY (for calculation with dates)
1. INTEGER : (0-9) without decimal e.g 95 94 93 21
2. REAL : (0-9) with decimal e.g 95.1 101.0 9.3 1.5 , 0.0
   = x = 95.1
3. STRING : Alphabets, Numbers, Symbols Paper Pika Sydl
4. CHAR : Single character : "P" "p" "A"
5. BOOLEAN : 2 comparison (True, false) (0,1) (Yes, No)

Algorithm

- Sequence of steps / instructions to implement a task.

STAGES OF ALGORITHM:

1. INPUT
2. PROCESS
3. OUTPUT

→ In questions try to make link.

INPUT → N1 ← 2
N2 ← 3

PROCESS → Answer ← N1 + N2

OUTPUT → OUTPUT Answer

Features of Pseudocode

- Features help the program writer to easily read and understand the code.

1. Indentation → Easier to identify blocks / structure of code.
2. Blank lines → can easily locate a specific block of code
3. Capitalization of keywords → Easily identify keywords
4. sensible variable name → Easier for others to understand the purpose of variable.
5. Comments

5. Helps other programmers to understand function of the code.

   Syntax: // This is a FOR Loop.

Source Code: It represents a solution/ design / algorithm expressed in a high-level language.

* Source code is not a high level-language.
* Flowcharts are not source-code.

Object Code: Translated version of source code

- Produced by compiler during translation stage
- Produced by translating source code. → imp.
- Not produced by the interpreter.

Pseudocode: It is a way of using keywords and identifiers to describe an algorithm without following the syntax of a particular programming language.

Flowchart: Graphical or pictorial representation of a program in a flow.

CONSTRUCTS

- Building blocks of programming

1. **Assignment:** A value is given a name (identifier) or the value assosciated with the given identifier is changed

E.g: Flag ← True
Number ← 5
↳ Number ← Number - 1

2. **Sequence:** Instructions are executed in a fixed order

✓
Input
Process
Output

✗
Process
Input
Output

(3) Selection:

Under certain conditions, some sequence of steps are performed, otherwise no or different sequence of steps are performed.

- IF — THEN - ELSE - END IF
- CASE OF OTHERWISE — END CASE

(4) Repetition / Iteration :

A sequence of steps performed a number of times

- Also known as Looping.

- For ... To ... Next (Count - Controlled loop)
- While ... Do ... End while (Pre condition loop)
- Repeat ... Until (Post condition loop)

name given to data ← # IDENTIFIER

① Constant

- Fix, not changeable

② Variable

- Temporary memory
- Changeable, not fixed

③ Array

- Temporary memory
- Changeable, not fixed

Constant: The value can not be changed accidentally during execution of a program.

Variable: stores a value that can change during execution

Array: A list of items of the same data type stored under a single name.

TEST DATA → will further link ahead.

Verification

- Checking that data has not changed during the transfer / input to a comp.

E.g :
- Double Entry
- Parity check
- Checksum
  - A value that represents number of bits in a transmission message.

Validation

- Checking that data meets a certain criteria.

- Range Check
- Presence check
- Length check
- Format check
- Character check
- Type Check

Types of Test Data

$5 \leq x \leq 10$

1. **Normal Data:** Accepted by the program and is used to show that program is working correctly. · $x = 4$

2. **Abnormal Data:** Should be rejected by the program $x < 5$, $x > 10$ (Unsuitable and could cause problems)

3. **Extreme Data:** Data on limit of that accepted by the program 5, 10

4. **Boundary Data:** Data on the limit which is accepted just outside the limit. 5, 10 , 11, 4 — Accepted, rejected

Q- What are features of a program?

- Function / procedure
- Sequence
- Iteration
- Selection
- Parameters
- Variable
- Logic operation

IDE → mored to p1

-Integrated development Environment is a software application that combines all features and tools needed by a software developer

Q- What are Features of an IDE?

- Pretty Print → Colour Coding of keywords
- Automatic Indentation
- Syntax checking
- Highlights any undeclared variable
- Type Checking
- Text Editor
- Formatting → Expanding and collapsing of blocks of code.
- Built-in library functions
- Context-Sensitive prompts.

Q- What are the features by an IDE that assist in "Initial Error Detection"?

- Dynamic Syntax Checking
- Type-checking
- Identification of unused / undeclared variables

Q- Describe methods you could use to find errors.

- Dry Run / tracetable → Checking a program with test data
- Breakpoint: Run the code to set point to find error
- Variable Watch: checks the content of the variable at specific points
- stepping: Execute the code line by line