JOBSHEET 6

Case Method 1

1. Learning Outcome

Students can solve case study problems by applying the concepts of data types, variables, operators, input-output, and selection structures.

2. Experiment

Allocated time: 100 minutes Instruction:

- Complete this assignment **individually**.
- Each student must write a program based on the given case study. Ensure that the program runs correctly and implements all the required features.

Question:

The academic department of a university wants to develop a simple system to determine student graduation status based on grades from two core courses:

- Algorithms and Programming
- Data Structures

Each course consists of three assessment components: Midterm Exam (30%), Final Exam (40%), and Assignments (30%).

Course Completion Requirements

1. **Course Completion Status** Student passes a course if: ● Final score **≥ 60**

- If final score < 60 → **Fail**

Numeric Score	Letter Grade	Grade Point	Qualification
80 < N ≤ 100	B+	4.0	Excellent
73 < N ≤ 80	B	3.5	Very Good
65 < N ≤ 73	C+	3.0	Good
60 < N ≤ 65	C	2.5	Fairly Good
50 < N ≤ 60	D	2.0	Fair
39 < N ≤ 50	E	1.0	Poor
N ≤ 39		0.0	Fail

- Convert the final score into a letter grade according to the following rules:

2. **Semester Completion Status (Nested If)** A student passes the semester if:

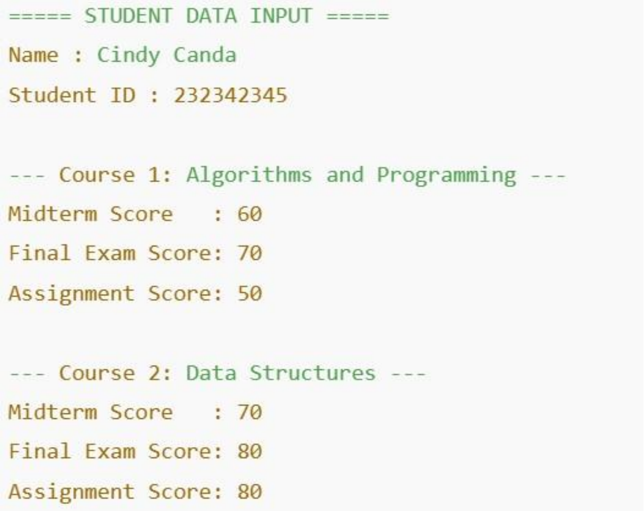
- Both courses have a “PASS” status.

> If the average final score of both courses ≥ 70 → Semester Status: PASS

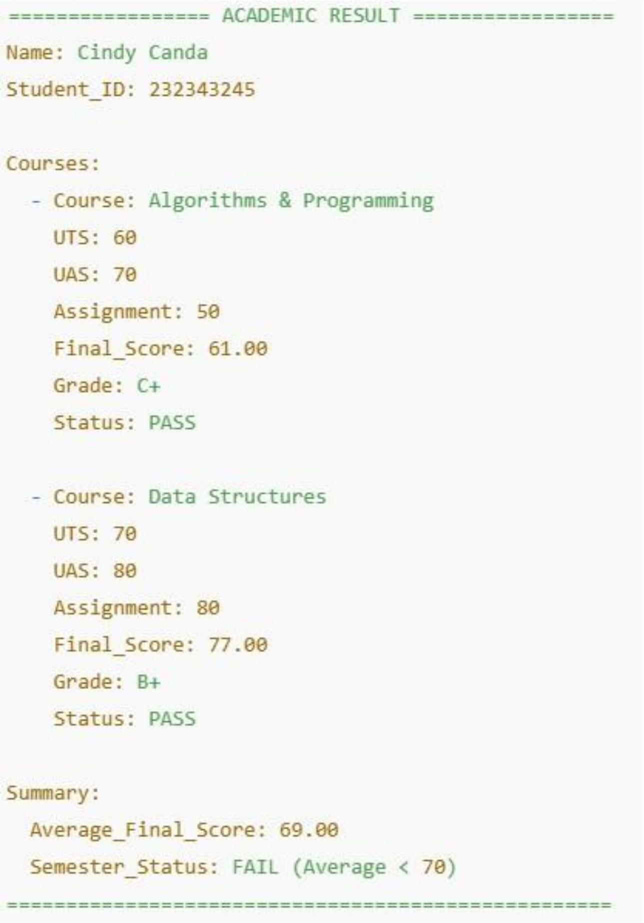
> If the average < 70 → Semester Status: FAIL

- If one or both courses are not passed → Semester Status: FAIL

Example:



```
===== STUDENT DATA INPUT =====
Name : Cindy Canda
Student ID : 232342345

--- Course 1: Algorithms and Programming ---
Midterm Score    : 60
Final Exam Score: 70
Assignment Score: 50

--- Course 2: Data Structures ---
Midterm Score    : 70
Final Exam Score: 80
Assignment Score: 80
```

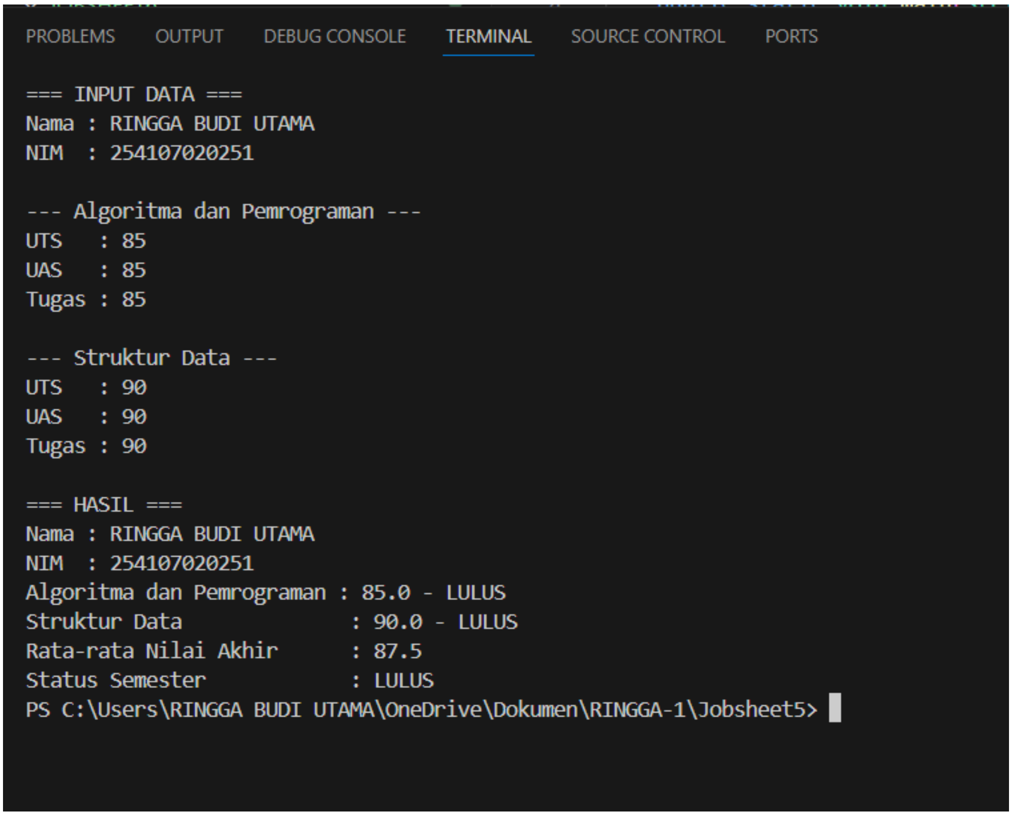


```
================= ACADEMIC RESULT =================
Name: Cindy Canda
Student_ID: 232343245

Courses:
  - Course: Algorithms & Programming
    UTS: 60
    UAS: 70
    Assignment: 50
    Final_Score: 61.00
    Grade: C+
    Status: PASS

  - Course: Data Structures
    UTS: 70
    UAS: 80
    Assignment: 80
    Final_Score: 77.00
    Grade: B+
    Status: PASS

Summary:
  Average_Final_Score: 69.00
  Semester_Status: FAIL (Average < 70)
===================================================
```

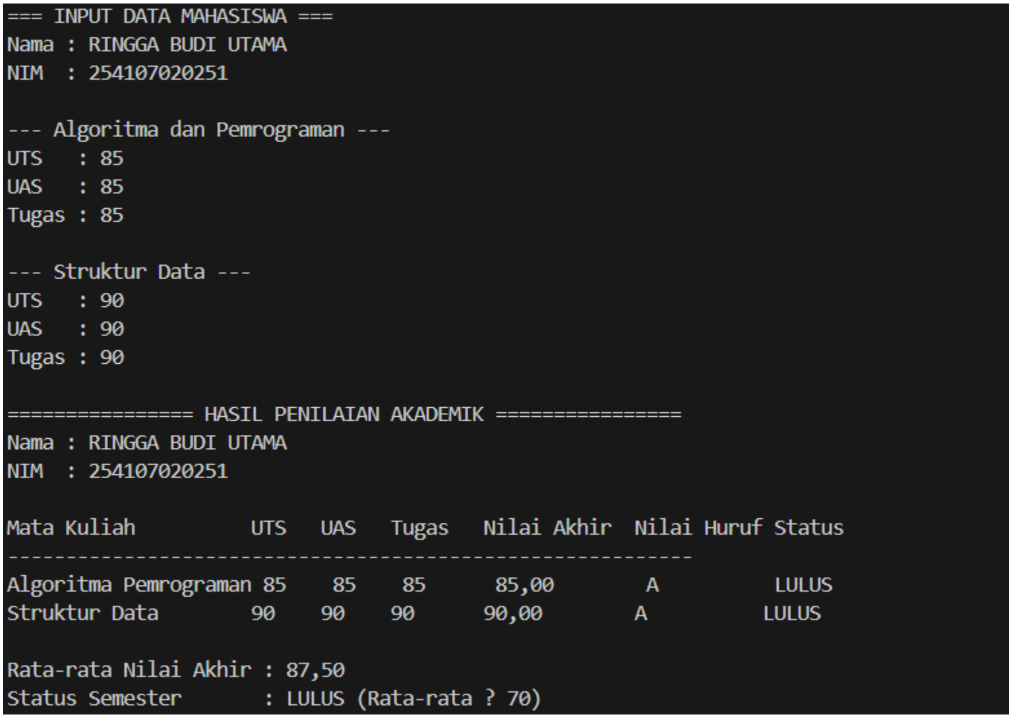
Assessment Rubric

Assessment Aspect	Weight (%)	Max Score	Evaluation Criteria
1. Understanding of Case Study & Logical Flow Analysis	20%	20	**15–20:** The student explains the program flow systematically (input → process → nested condition → output) and clearly understands the course and semester passing rules. **8–14:** Explanation is adequate but some logic parts are not well understood. **0–7:** Unable to explain the program flow correctly.
2. Identification of Variables & Data Types	15%	15	**12–15:** The student explains the purpose of variables, data types, and program block order clearly; able to show the relationship between variables and calculations. **6–11:** Explanation is fair but shows some confusion. **0–5:** Does not understand code structure or variables.
3. Understanding of Arithmetic Operators in Score Calculation	10%	10	**8–10:** The student correctly explains how operators (+, *, /) are used to calculate final scores and averages, and understands operator precedence. **4–6:** Mostly correct but uncertain about calculation order. **0–4:** Does not understand arithmetic operations.
4. Explanation and Understanding of IF and Nested IF Usage	20%	20	**15–20:** The student can identify nested if parts in the code, explain why they are used, and describe how the hierarchical logic works (e.g., check final score → check exam score). **8–14:** Nested if is used but explanation lacks depth. **0–7:** Does not understand or misinterprets nested if concepts.
5. Ability to Explain the Logic of Course and Semester Passing Criteria	15%	15	**12–15:** Clearly explains course and semester passing logic, including the relationship with average scores. **6–11:** Some minor misconceptions. **0–5:** Cannot explain or gives incorrect reasoning.
6. Program Compilation and Correct Output	10%	10	**8–10:** Runs perfectly with correct output. **4–7:** Runs with minor bugs. **0–3:** Does not run or produces errors.
7. Code Relevance to the Case Study (including variables, operators, conditions, output)	10%	10	**8–10:** Code fully matches all instructions (no arrays/loops/methods), correctly uses nested if, and produces accurate output. **4–7:** Minor technical deviations but main logic is correct. **0–3:** Code does not match the case study or contains major errors.

The program can be compiled and the output runs smoothly :



```
=== INPUT DATA ===
Nama : RINGGA BUDI UTAMA
NIM  : 254107020251

--- Algoritma dan Pemrograman ---
UTS   : 85
UAS   : 85
Tugas : 85

--- Struktur Data ---
UTS   : 90
UAS   : 90
Tugas : 90

=== HASIL ===
Nama : RINGGA BUDI UTAMA
NIM  : 254107020251
Algoritma dan Pemrograman : 85.0 - LULUS
Struktur Data             : 90.0 - LULUS
Rata-rata Nilai Akhir     : 87.5
Status Semester           : LULUS
PS C:\Users\RINGGA BUDI UTAMA\OneDrive\Dokumen\RINGGA-1\Jobsheet5>
```



```
=== INPUT DATA MAHASISWA ===
Nama : RINGGA BUDI UTAMA
NIM  : 254107020251

--- Algoritma dan Pemrograman ---
UTS   : 85
UAS   : 85
Tugas : 85

--- Struktur Data ---
UTS   : 90
UAS   : 90
Tugas : 90

================ HASIL PENILAIAN AKADEMIK ================
Nama : RINGGA BUDI UTAMA
NIM  : 254107020251

Mata Kuliah          UTS   UAS   Tugas   Nilai Akhir  Nilai Huruf Status
-----------------------------------------------------------
Algoritma Pemrograman 85    85    85      85,00        A          LULUS
Struktur Data        90    90    90      90,00        A          LULUS

Rata-rata Nilai Akhir : 87,50
Status Semester       : LULUS (Rata-rata ? 70)
```