PRACTICE REPORT

WEB PROGRAMMING LAB WORKS

MODULE 10

"JSON (JavaScript Object Notation)"

Assembled by:

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X

PROGRAM STUDI TEKNIK INFORMATIKA

FAKULTAS KOMUNIKASI DAN INFORMATIKA

UNIVERSITAS MUHAMMADIYAH SURAKARTA

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PRACTICE

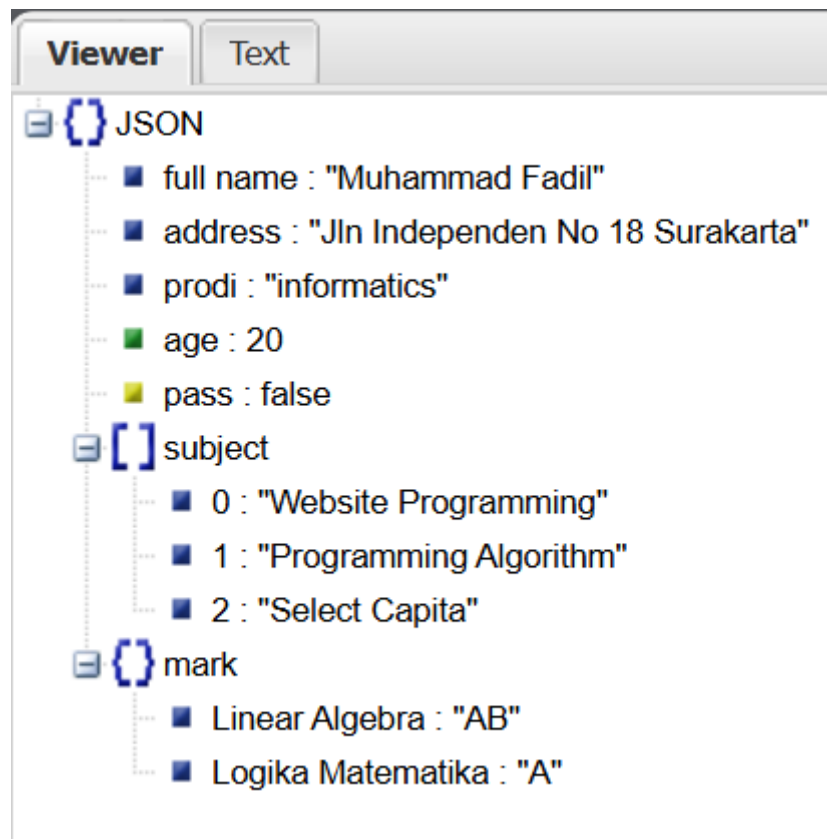1. **Attempt 1 (JSON File)**

```json
Module_10 > {} data.json > ...
  1    {
  2        "full name" : "Muhammad Fadil",
  3        "address" : "Jln Independen No 18 Surakarta",
  4        "prodi" : "informatics",
  5        "age" : 20,
  6        "pass" : false,
  7        "subject" : [
  8            "Website Programming",
  9            "Programming Algorithm",
 10            "Select Capita"
 11        ],
 12        "mark" : {
 13            "Linear Algebra" : "AB",
 14            "Logika Matematika" : "A"
 15        }
 16
 17    }
```

Picture 1.1 The Code.

(Explanation)

Muhammad Fadil is a 20-year-old student majoring in Informatics, living at Jln Independen No 18 Surakarta. He has not graduated yet (pass: false) and is currently studying subjects like Website Programming, Programming Algorithm, and Select Capita. His academic grades include AB in Linear Algebra and A in Mathematical Logic.

(Screenshot Output)

Picture 1.2 The Output.

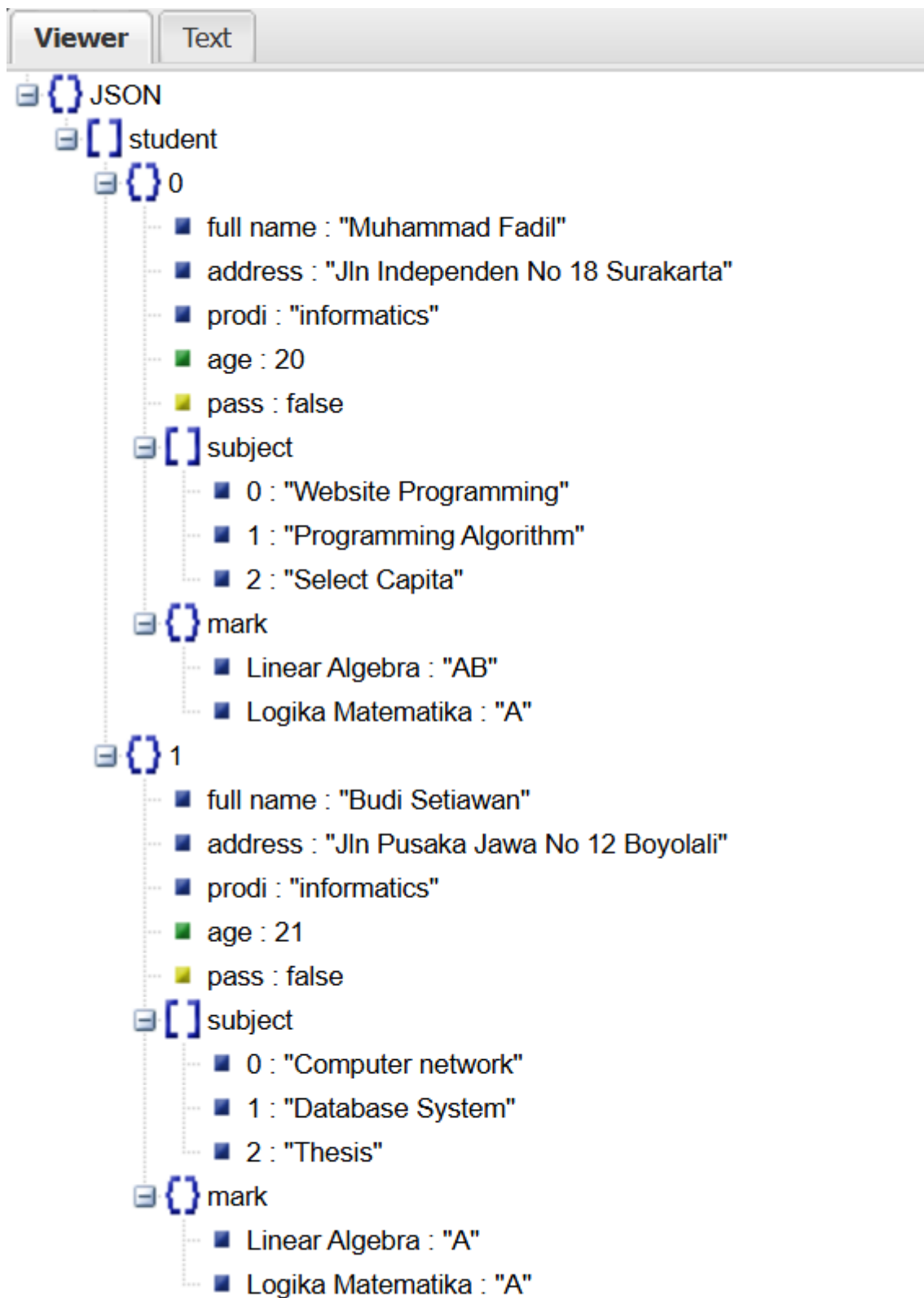2. **Experiment 2 (JSON file with array data type)**

```json
1    {"student" : [
2        {
3            "full name" : "Muhammad Fadil",
4            "address" : "Jln Independen No 18 Surakarta",
5            "prodi" : "informatics",
6            "age" : 20,
7            "pass" : false,
8            "subject" : [
9                "Website Programming",
10               "Programming Algorithm",
11               "Select Capita"
12           ],
13           "mark" : {
14               "Linear Algebra" : "AB",
15               "Logika Matematika" : "A"
16           }
17       },
18       {
19           "full name" : "Budi Setiawan",
20           "address" : "Jln Pusaka Jawa No 12 Boyolali",
21           "prodi" : "informatics",
22           "age" : 21,
23           "pass" : false,
24           "subject" : [
25               "Computer network",
26               "Database System",
27               "Thesis"
28           ],
29           "mark" : {
30               "Linear Algebra" : "A",
31               "Logika Matematika" : "A"
32           }
33       }
34   ]
35
36   }
```

Picture 2.1 the code.

(Explanation)
Muhammad Fadil is a 20-year-old Informatics student living at Jln Independen No 18 Surakarta. He is currently studying subjects like Website Programming, Programming Algorithm, and Select Capita, and has received AB in Linear Algebra and A in Mathematical Logic. Meanwhile, Budi Setiawan, a 21-year-old Informatics student from Jln Pusaka Jawa No 12 Boyolali, is taking Computer Network, Database System, and Thesis, and has obtained A in both Linear Algebra and Mathematical Logic.

| Viewer | Text |

```
□ {} JSON
   □ [] student
      □ {} 0
            ■ full name : "Muhammad Fadil"
            ■ address : "Jln Independen No 18 Surakarta"
            ■ prodi : "informatics"
            ■ age : 20
            ■ pass : false
         □ [] subject
               ■ 0 : "Website Programming"
               ■ 1 : "Programming Algorithm"
               ■ 2 : "Select Capita"
         □ {} mark
               ■ Linear Algebra : "AB"
               ■ Logika Matematika : "A"
      □ {} 1
            ■ full name : "Budi Setiawan"
            ■ address : "Jln Pusaka Jawa No 12 Boyolali"
            ■ prodi : "informatics"
            ■ age : 21
            ■ pass : false
         □ [] subject
               ■ 0 : "Computer network"
               ■ 1 : "Database System"
               ■ 2 : "Thesis"
         □ {} mark
               ■ Linear Algebra : "A"
               ■ Logika Matematika : "A"
```

Picture 2.2 the results

3. Attempt 3 (Search for external JSON)

```json
[
    {
        "userId": 1,
        "username": "johndoe",
        "email": "johndoe@example.com",
        "passwordHash": "abc123hashedpassword",
        "Gender" : null,
        "age" : 19,
        "hobbies": ["reading", "gaming", "traveling"],
        "work" : false,
        "profile": {
            "firstName": "John",
            "lastName": "Doe",
            "birthDate": "1990-01-01",
            "gender": "male",
            "avatarUrl": "https://example.com/avatars/johndoe.jpg",
            "bio": "Software developer with a passion for open-source projects."
        },
        "preferences": {
            "language": "en",
            "theme": "dark",
            "notifications": {
                "email": true,
                "sms": false,
                "push": true
            },
            "privacy": {
                "showOnlineStatus": false,
                "profileVisibility": "friends"
            }
        },
        "accountStatus": {
            "isActive": true,
            "lastLogin": "2025-01-10T12:45:00Z",
            "createdAt": "2022-05-15T08:30:00Z"
        },
        "activityLogs": [
            {
                "timestamp": "2025-01-09T14:20:00Z",
                "activity": "Logged in from IP 192.168.1.10"
            },
            {
```

```json
        "timestamp": "2025-01-08T10:05:00Z",
        "activity": "Updated profile picture"
      }
    ]
  },
  {
    "userId": 2,
    "username": "janedoe",
    "email": "janedoe@example.com",
    "passwordHash": "xyz987hashedpassword",
    "profile": {
      "firstName": "Jane",
      "lastName": "Doe",
      "birthDate": "1992-04-12",
      "gender": "female",
      "avatarUrl": "https://example.com/avatars/janedoe.jpg",
      "bio": "Digital marketer and blogger."


    },
    "preferences": {
      "language": "fr",
      "theme": "light",
      "notifications": {
        "email": false,
        "sms": true,
        "push": true
      },
      "privacy": {
        "showOnlineStatus": true,
        "profileVisibility": "public"
      }
    },
    "accountStatus": {
      "isActive": true,
      "lastLogin": "2025-01-10T09:15:00Z",
      "createdAt": "2023-03-20T11:00:00Z"
```

```json
80          },
81          "activityLogs": [
82              {
83                  "timestamp": "2025-01-09T18:30:00Z",
84                  "activity": "Commented on a post"
85              },
86              {
87                  "timestamp": "2025-01-08T16:45:00Z",
88                  "activity": "Liked a post"
89              }
90          ]
91      }
92  ]
```

Picture 3.1 the code.

(Explanation)
John Doe, a 19-year-old software developer, enjoys reading, gaming, and traveling, and prefers a dark theme for his account while keeping his online status hidden. His latest activities include logging in from an IP address and updating his profile picture, and his account has been active since May 15, 2022. Meanwhile, Jane Doe, a digital marketer and blogger, speaks French, prefers a light theme, keeps her profile visibility public, and recently commented on and liked a post—her account was created on March 20, 2023.

Picture 3.2 the results

4. Attempt (External JSON)

```json
  {
    "userId": 1,
    "username": "johndoe",
    "email": "johndoe@example.com",
    "passwordHash": "abc123hashedpassword",
    "Gender" : null,
    "age" : 19,
    "hobbies": ["reading", "gaming", "traveling"],
    "work" : false,
    "profile": {
      "firstName": "John",
      "lastName": "Doe",
      "birthDate": "1990-01-01",
      "gender": "male",
      "avatarUrl": "https://example.com/avatars/johndoe.jpg",
      "bio": "Software developer with a passion for open-source projects."
    },
```

Picture 4.1 the code.

(Explanation)
This JSON structure represents user data, storing information about John Doe, including his personal details, hobbies, work status, and profile information in a structured format.

- userId : 1
- username : "johndoe"
- email : "johndoe@example.com"
- passwordHash : "abc123hashedpassword"
- Gender : null
- age : 19
- [ ] hobbies
  - 0 : "reading"
  - 1 : "gaming"
  - 2 : "traveling"
- work : false
- { } profile
  - firstName : "John"
  - lastName : "Doe"
  - birthDate : "1990-01-01"
  - gender : "male"
  - avatarUrl : "https://example.com/avatars/johndoe.jpg"
  - bio : "Software developer with a passion for open-source projects."

Picture 4.2 the results

ASSIGNMENT

1. **Create a JSON file that describes the data reagrding the courses you are taking this semseter. The entries in the JSON file must be complete, for example courses name, number of credits, class schedule, teaching lecturer, courses material chapters, etc (*the more complete the better, and the better the score you will get).**

```
Module_10 > {} Task.json > [ ] courses > {} 0 > [ ] materials > ᵃᵇᶜ 4
  1   {
  2       "StudentID": "L200234275",
  3       "Name" : "Onic Agustino",
  4       "semester": "Genap 2025/4",
  5       "courses": [
  6         {
  7           "courseId": "MK001",
  8           "courseName": "Pemrograman Web",
  9           "credits": 3,
 10           "schedule": {
 11             "day": "Rabu",
 12             "time": "08:00 - 10:00",
 13             "room": "Lab RPL"
 14           },
 15           "lecturer": {
 16             "name": "Gunawan",
 17             "email": "gn3@ums.ac.id"
 18           },
 19           "materials": [
 20             "HTML & CSS",
 21             "JavaScript Dasar",
 22             "Framework Frontend",
 23             "Backend dengan Node.js",
 24             "Database dan API"
 25           ]
 26         },
 27         {
 28           "courseId": "MK002",
 29           "courseName": "Algoritma dan Struktur Data",
 30           "credits": 3,
 31           "schedule": {
 32             "day": "Rabu",
 33             "time": "10:00 - 12:00",
 34             "room": "Ruang 304"
 35           },
 36           "lecturer": {
 37             "name": "Endang",
 38             "email": "endang@ums.com"
 39           },
 40           "materials": [
 41             "Pengenalan Algoritma",
 42             "Struktur Data Dasar",
```

```json
43              "Sorting & Searching",
44              "Graf dan Tree",
45              "Analisis Kompleksitas"
46            ]
47          },
48          {
49            "courseId": "MK003",
50            "courseName": "Sistem Operasi",
51            "credits": 3,
52            "schedule": {
53              "day": "Jumat",
54              "time": "13:00 - 15:00",
55              "room": "Ruang 212"
56            },
57            "lecturer": {
58              "name": "Dedi Gunawan",
59              "email": "dg@ums.com"
60            },
61            "materials": [
62              "Konsep Dasar Sistem Operasi",
63              "Manajemen Proses",
64              "Manajemen Memori",
65              "Sistem File",
66              "Keamanan dan Jaringan"
67            ]
68          }
69        ]
70    }
```
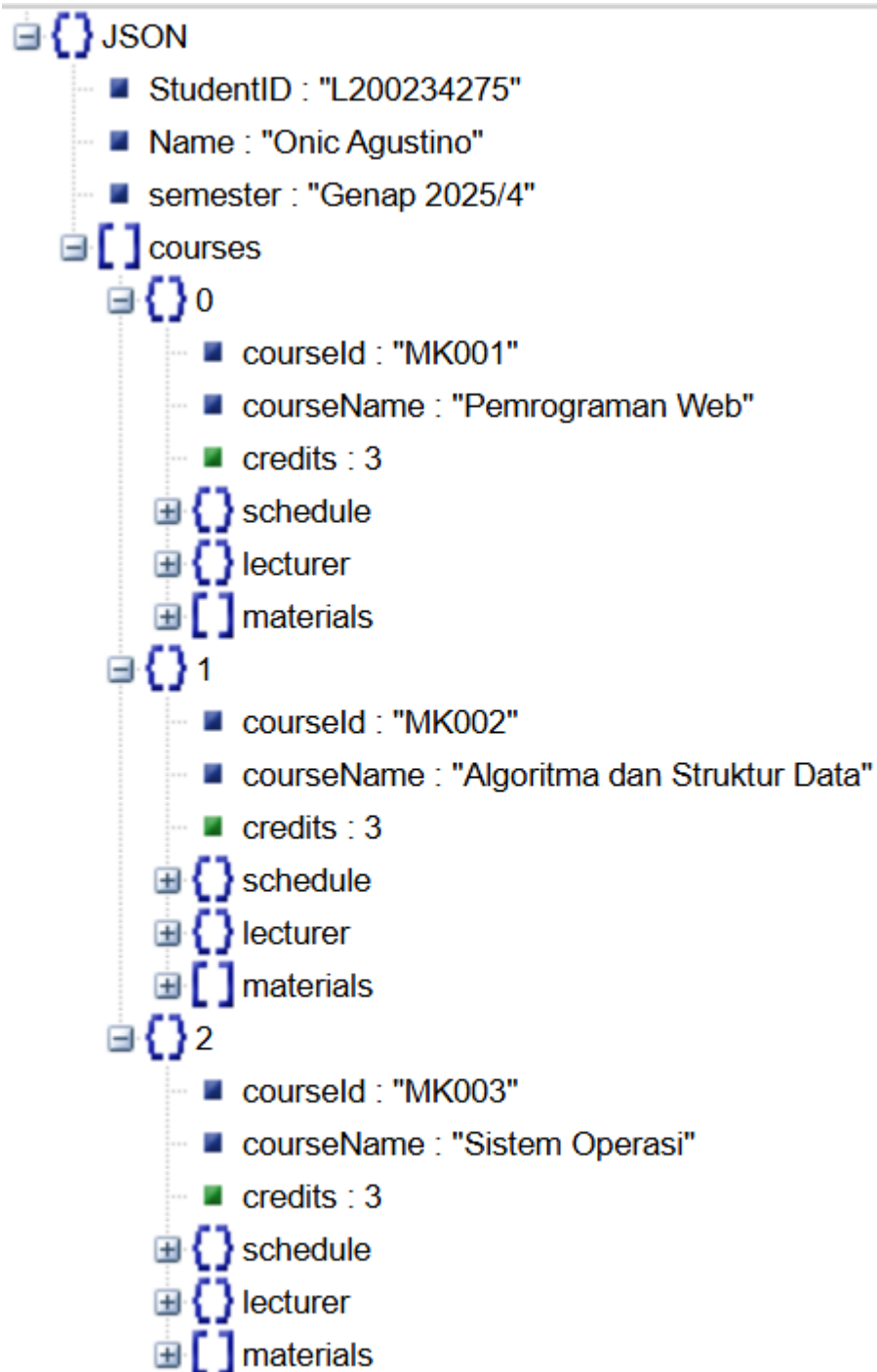
Picture 1.1 tak the code.

(Explanation)

Onic Agustino is a student with ID L200234275, enrolled in the even semester of 2025, taking three courses. His subjects include Web Programming, Algorithms & Data Structures, and Operating Systems, each with assigned lecturers, schedules, and study materials. The structured data helps manage academic details efficiently in educational systems.

(Screenshot Output)

```
⊟ {} JSON
    ■ StudentID : "L200234275"
    ■ Name : "Onic Agustino"
    ■ semester : "Genap 2025/4"
  ⊟ [] courses
    ⊟ {} 0
        ■ courseId : "MK001"
        ■ courseName : "Pemrograman Web"
        ■ credits : 3
      ⊞ {} schedule
      ⊞ {} lecturer
      ⊞ [] materials
    ⊟ {} 1
        ■ courseId : "MK002"
        ■ courseName : "Algoritma dan Struktur Data"
        ■ credits : 3
      ⊞ {} schedule
      ⊞ {} lecturer
      ⊞ [] materials
    ⊟ {} 2
        ■ courseId : "MK003"
        ■ courseName : "Sistem Operasi"
        ■ credits : 3
      ⊞ {} schedule
      ⊞ {} lecturer
      ⊞ [] materials
```

Picture 1.2 task results