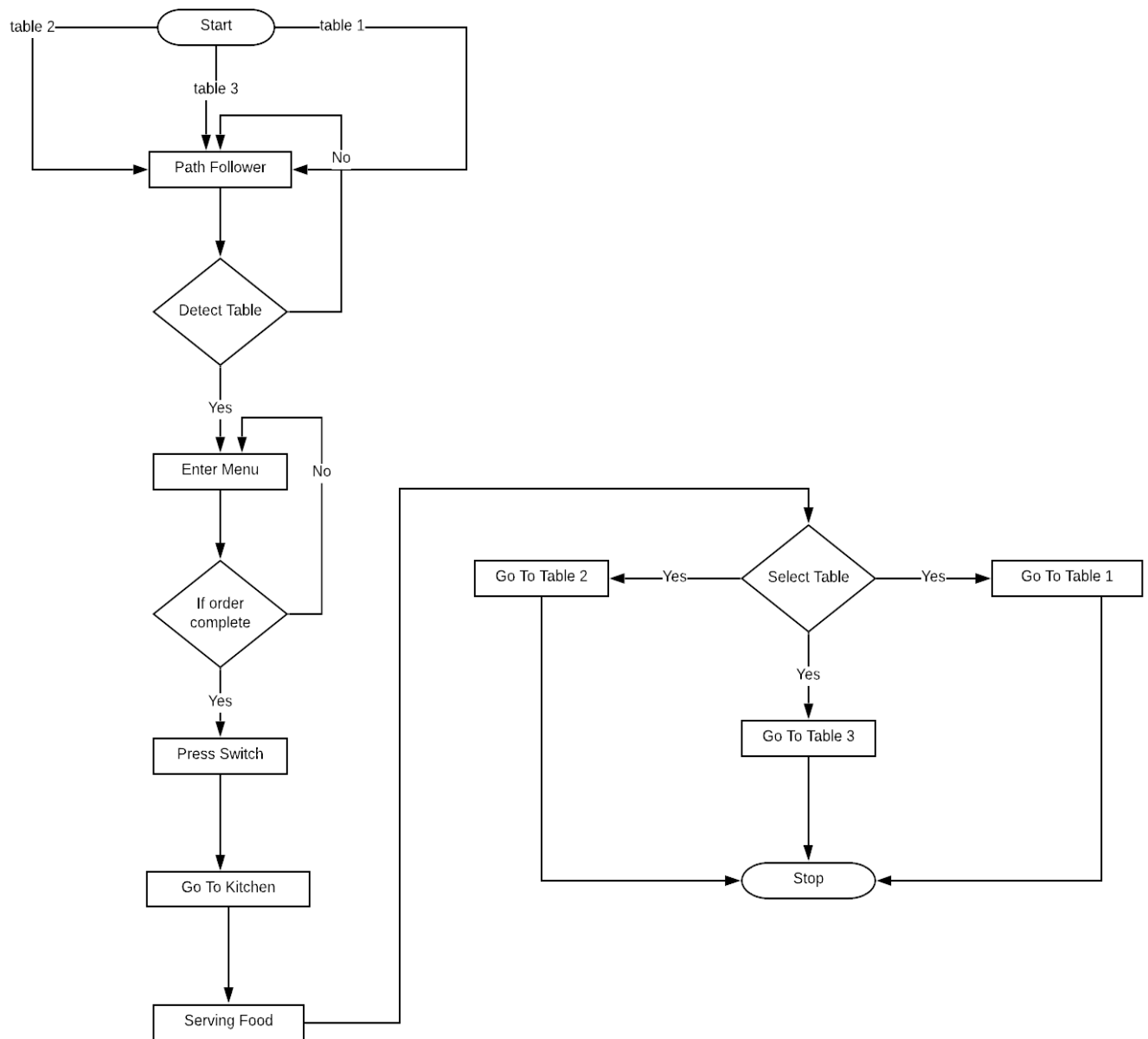# Assignment # 2

Question # 1:
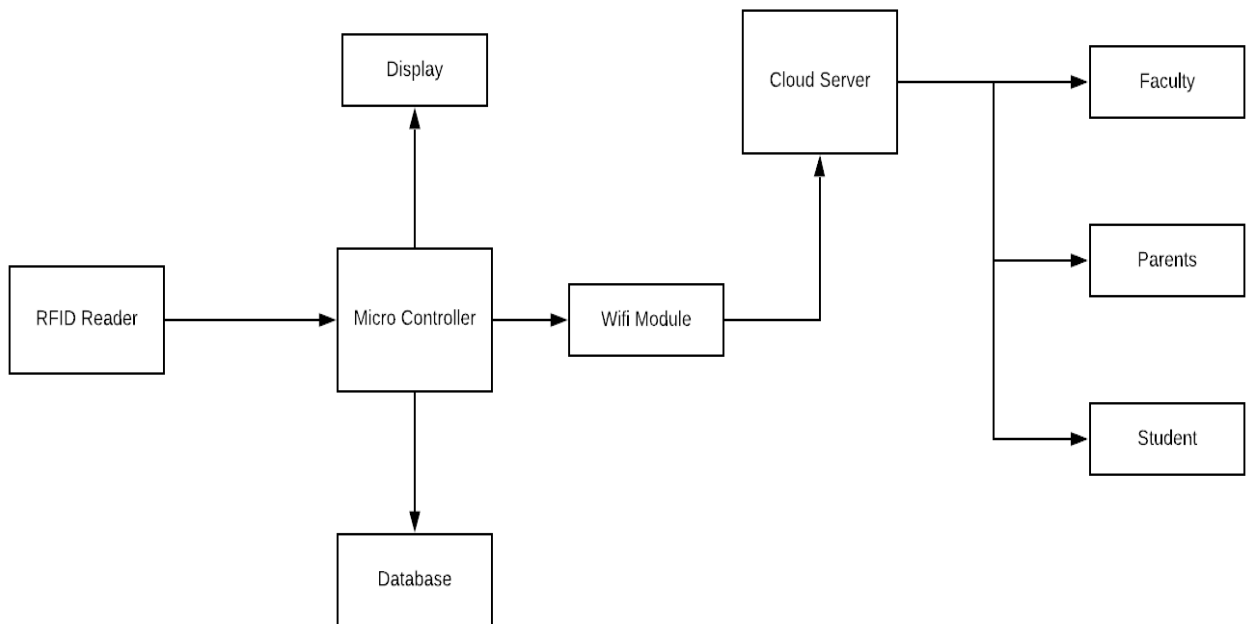
Process View of Food Serving Robot:

Conceptual View of Food Serving Robot:

```
                            ┌──────────────┐
                            │ Serving Food │
                            └──────────────┘
                               ▲      │
                               │      ▼
        ┌──────────────────────────────────────────────────┐
        │                     ROBOT                         │
        │    ╭─────────────╮        ╭───────────────────╮   │
        │    │   Vision    │        │ Energy Management  │   │
        │    ╰─────────────╯        ╰───────────────────╯   │
        └──────────────────────────────────────────────────┘
          │          ▲                    ▲          │
          ▼          │                    │          ▼
     ┌────────────┐                           ┌──────────────────┐
     │ Navigation │                           │ User Interaction │
     └────────────┘                           └──────────────────┘
```
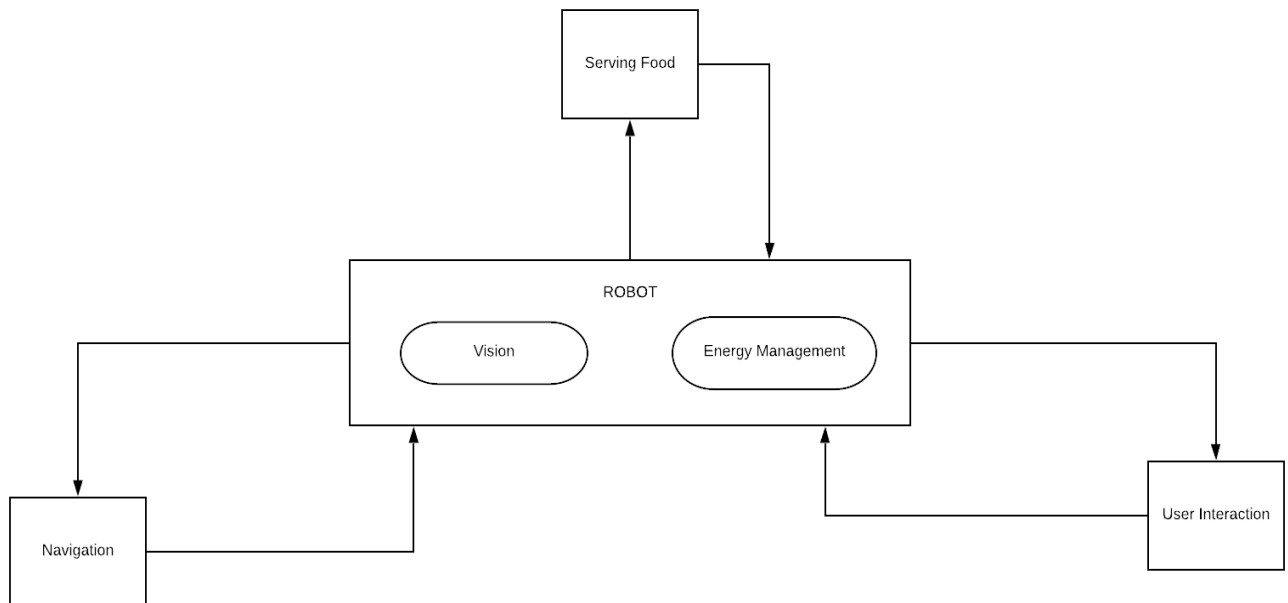
Conceptual View of RFID Based Student Attendance System:

```
                        ┌─────────┐                    ┌──────────────┐         ┌──────────┐
                        │ Display │                    │ Cloud Server │ ──────▶ │ Faculty  │
                        └─────────┘                    └──────────────┘         └──────────┘
                             ▲                               ▲
                             │                               │                  ┌──────────┐
 ┌─────────────┐      ┌──────────────────┐      ┌────────────┐          ──────▶ │ Parents  │
 │ RFID Reader │ ───▶ │ Micro Controller │ ───▶ │ Wifi Module│ ─────────        └──────────┘
 └─────────────┘      └──────────────────┘      └────────────┘
                             │                                                  ┌──────────┐
                             ▼                                           ──────▶│ Student  │
                        ┌──────────┐                                            └──────────┘
                        │ Database │
                        └──────────┘
```

Process View of RFID Based Student Attendance System:

```
                    ╭──────────────╮
                    │    Start     │
                    ╰──────────────╯
                           │
                           ▼
                ┌──────────────────────┐
                │  Images Stored in data│
                │         base          │
                └──────────────────────┘
                           │
                           ▼
                ┌──────────────────────┐
                │  Recognition Process  │
                │         Start         │
                └──────────────────────┘
                           │
                           ▼
                ┌──────────────────────┐
                │   Capture The User    │
                │         Image         │
                └──────────────────────┘
                           │
                           ▼
                      ◇ Compare ◇
                    ◇ with Database ◇──Not Matched──▶ ┌─────────────┐
                      ◇ Images ◇                       │ Mark Absent │
                           │                           └─────────────┘
                        Matched                               │
                           ▼                                  ▼
                ┌──────────────────┐              ┌──────────────────┐
                │   Mark Present   │              │  Send Message to │
                └──────────────────┘              │      Parents     │
                           │                      └──────────────────┘
                           ▼                                  │
                ┌──────────────────┐ ◀──────────────────────┘
                │  File generated  │
                │ with Student detail│
                └──────────────────┘
                           │
                           ▼
                ┌──────────────────┐
                │ Attendence uploaded│
                │ automatically to the│
                │      Server       │
                └──────────────────┘
                           │
                           ▼
                    ╭──────────────╮
                    │     Stop     │
                    ╰──────────────╯
```
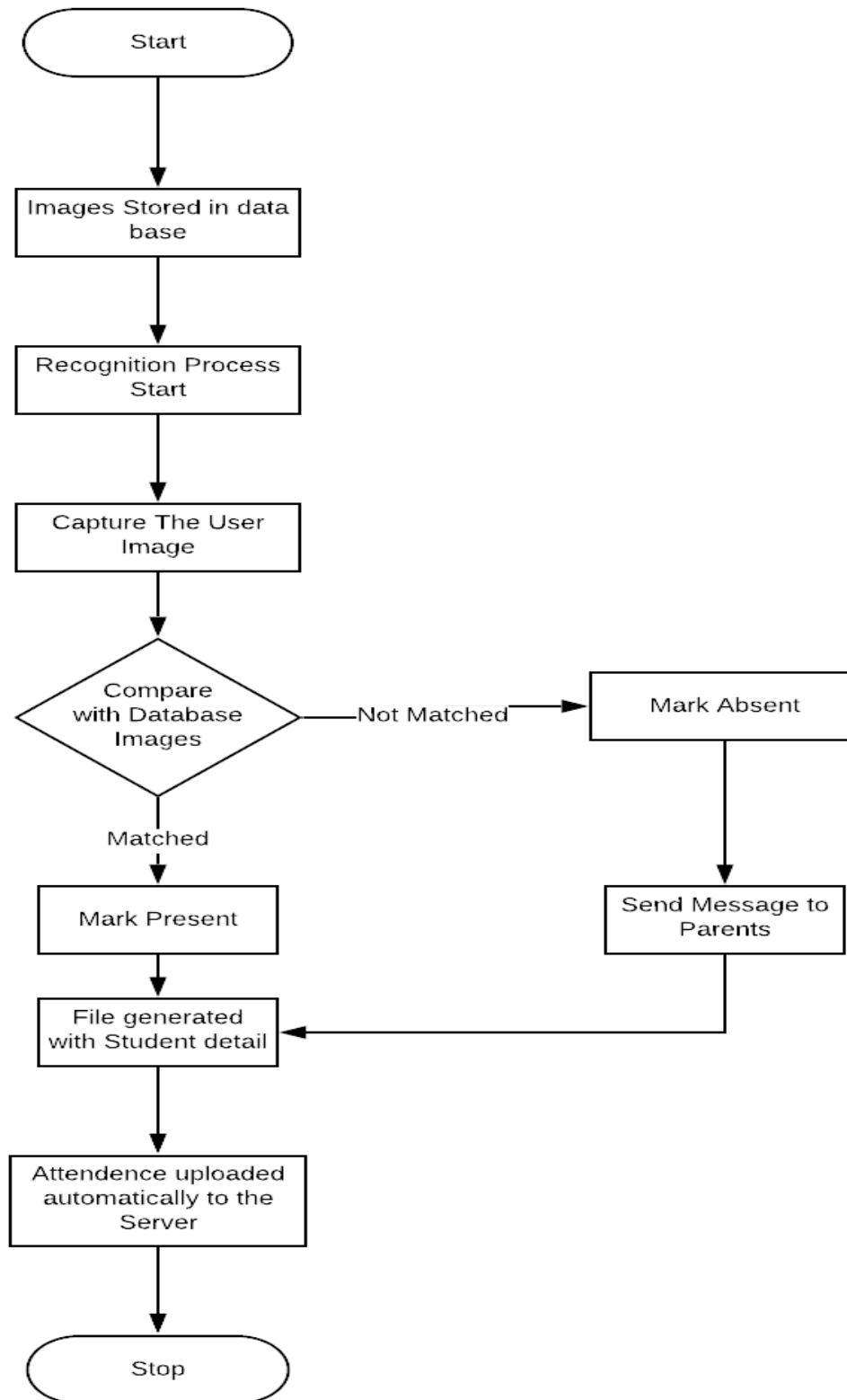
Question # 2

1. In RFID student attendance system, I am using client-server architectural pattern because on one side we have different clients for our application and on other side we have data which we have to represent it to different client in different format and client is located at different places and access differently. So, we take data from our system and push data to server so our client access it.

2. In Food serving robot, I am using pipe and filter architectural pattern because in this robot one process triggered the other process and used the output of one process in other process and their is sequence of steps like first go to table and then take order and then go to kitchen and then go back to table to serve the food.

Question # 3

```
            ┌──────────────┐
            │  PHP Script  │
            └──────────────┘
                   │
                   ▼
            ┌──────────────┐      Yes        ┌──────────────┐
            │  Has Cache?  │───────────────▶ │  Load Cache  │
            └──────────────┘                 └──────────────┘
                   │ No                             │
                   ▼                                │
            ┌──────────────┐                        │
            │  Tokenize    │                        │
            └──────────────┘                        │
                   │                                │
                   ▼                                │
            ┌──────────────┐                        │
            │   Parse      │                        │
            └──────────────┘                        │
                   │                                │
                   ▼                                │
            ┌──────────────┐                        │
            │  Compile     │                        │
            └──────────────┘                        │
                   │                                │
                   ▼                                │
            ┌──────────────┐                        │
            │  Optimize    │                        │
            └──────────────┘                        │
                   │                                │
                   ▼                                │
            ┌──────────────┐                        │
            │   Cache      │                        │
            └──────────────┘                        │
                   │                                │
                   └──────────▶┌──────────────┐◀────┘
                               │   Execute    │
                               └──────────────┘
```