

L03 – Remote Vehicle Diagnosis

From 16:00 – 18:00 : join teams room [Join Microsoft Teams Meeting](#)

From 18:00 – 20:00: join teams room [Join Microsoft Teams Meeting](#)

#1. → 1 point(s)

Create a server application called diagnosis and one client applications.

The server and the clients shall be able to exchange messages.

In order to be graded for this point, you'll need to:

- Send one character from server and see that the client receives it (print it in console).
- Send one character from client and see that the server receives it (print it in console).

#2. → 0.5 point(s)

Enhance the client application with a function for reading and parsing a JSON file.

In order to be graded for this point, the application shall be able to read and parse files containing the following JSONs:

- File 1

```
{  
  "km": 1300,  
  "avgspeed": 70  
}
```

- File 2

```
{  
  "latitude": 13.456,  
  "longitude": 15.32  
}
```

#3. → 1 point(s)

Copy the code for the client application (from point #2) into a new client application.

Name the application boardcomputer.

Add the following functionality to this application:

- Read and parse the following json file:

```
{  
  "km": 1300,  
  "avgspeed": 70  
}
```

- Receive and parse requests from server to obtain information.

Each request has only an ID.

ID can be:

- 0 --> request km
- 1 --> request average speed
- Send the requested information to server (either km or average speed - depending on the received request). Server is able to parse and print to console the received request.

#4. → 1.5 point(s)

Copy the code for the client application (from point #1) into a new client application.

Name the application geofence.

Add the following functionality to this application:

- This application shall have two states:
 - Enabled
 - Disabled
- Geofence is (by default) in state Disabled. In this state, it shall do nothing.
- Read and parse the following JSON file:

```
{  
  "latitude": 13.456,  
  "longitude": 15.32  
}
```
- Receive and parse a request from server to set initial coordinates.
The payload of this request contains a set of coordinates (two x pair {longitude, latitude}). These coordinates are set so that they make a rectangle surface. They are stored in the application.
- Receive a request from server to enable.
 - In case the initial coordinates were not set, then geofence replies with an error to the server.
 - In case the initial coordinates were set, then geofence shall compare the values read from JSON file with the ones received from server. If the ones read from JSON are not within the square set previously by server, a message is sent to server. Server will receive the error message and print the information to console.
- Receive a request from server to disable.
Starting this point, it shall only wait for messages from server and do no computation of any sort.