Assignment in Microprocessors

Write an assembly program in Keil Uvision for the corresponding ARM processor that you learned, which performs basic operations of a system that controls the parking duration of a car.

Assume that a driver enters a controlled parking area and upon entry, receives a ticket with a five-digit number (for simplification, consider it in hexadecimal format). Upon exit, the driver inserts the ticket into a machine, and the system recognizes how long the car remained in the parking space. Knowing the duration, the system displays the amount the driver needs to pay.

Include comments in your code that explain the individual operations of the program, as well as comments where necessary, regarding your choices in the program's architecture. Present screenshots of the program's functionality.

Algorithm

The algorithm is as follows:

- Upon the entry of a car (ticket issuance), a timer starts, which stops upon inserting the ticket into the cashing machine.
- The amount the driver needs to pay can follow the following charges:

For a duration of less than one hour: €0.5
For a duration of more than one hour and less than two hours: €0.95
For a duration of more than two hours and less than three hours: €1.7
For a duration of more than three hours and less than four hours: €2.6
For a duration of more than four hours and less than five hours: €3.5

- The user will input the money.
- The system will issue a ticket that the driver can use to open the barrier and exit the parking area.

Comments

- You will use input/output commands.
- For simplification purposes, you could use the car's entry number in the parking as the memory address and the duration of stay as the data stored in it.