Lab Exercise 3

Part 1. (float point using single and double precision

Write a program with the following 5 options. Each option is a separate procedure. After option is selected perform given task and prompt user again for next option.

The options should be as follows:

NOTE: All options are procedures…hence use JAL instruction for options

1. Area of circle (input radius as float, output Area)

2. Circumference of a Circle (input radius as float, output Circle)

3. Area of rectangle (input length and width as double, output Area)

4. Perimeter of rectangle (input length and width as double, output Area)

5. Exit Program

Part 2. (Memory Mapped I/O -- Polling)

NOTE: you cannot use syscall when using memory mapped I/O in SPIM simulator

Write a separate program that allows you to simulate a car crash alert program. The keyboard will be used as inputs. The display will print the scenario based on input. USE POLLING METHOD!

|  |  |
| --- | --- |
| A | Accelerating |
| B | Braking(default) |
| C | Crash |
| S | Speed(default 0) |

Initial Conditions. Assume that you are braking and the speed is 0

You will poll the keyboard. Ignore all inputs other than A, B, C and S

If A occurs assume we are accelerating and no longer braking PRINT “car acel”. If A occurs and we are already accelerating nothing changes.

If B occurs assume we are braking and no longer accelerating PRINT “car brak”. If B occurs and we are already braking nothing changes.

If C occurs PRINT ”car crash” . If speed is equal to or below 15mph PRINT “Airbag no deploy”. If speed is above 15mph and below 45mph PRINT “Airbags deployed”. If speed is equal to or above 45mph and Braking then PRINT” Airbags deploy Ambulance no alert”

If speed is equal to or above 45mph and Accelerating then PRINT” Airbags deploy Ambulance alerted!”

If S occurs then input the numbers until next S. This will be the speed of the vehicle. Hence input = “S27S” means the speed is 27mph. HINT you will need to convert the number read from ascii format.