**Assignment # 1**

* **Due Date: Sat 29 Sept**
* **Submit it printed in a suitable format (not written in hands)**

A junior park run event is held every week on a Saturday morning in a local park over a distance of two kilometers. Children between the ages of 4 and 14 inclusive can register to take part. Children register with their name and age. When they register, they are allocated a unique identification number of four digits; the last digit is a check digit. Once registered a child can take part in junior park run events for a year.

For each even, the organizers record the time each child takes to run two kilometers. Their time is stored for every event they complete and the number of runs they have completed is updated by one. If their time is faster than their personal best (PB) time, their PB time is updated. When a child has completed 11 runs, they are awarded a half-marathon wristband. When a child has completed 22 runs, they are awarded a full-marathon wristband.

A program is required to update the children's data, update PB times if necessary, and decide if a wristband is to be awarded. The program also needs to identify the fastest child at this event for each of the age ranges: 4 to 6, 7 to 10, and 11 to 14.

**Write and test an algorithm (pseudocode) do the following tasks:**

**Task 1- Registration to take part**

Write a program to set up arrays to store the data for 20 children. On registration, each child must be allocated a unique identification number of four digits; the last digit is a check digit. The unique identification number, age in years and names for each child is recorded and stored on registration. The PB time and the number of runs are initialized to zero and these values stored on registration. Their PB time is stored as minutes correct to two decimal places.

**Task 2 – Recording the times**

Extend your algorithm to record the unique identification number and to input the start time and finish time for every child completing the junior park run event. Calculate and store the time each child took to complete the run. A registered child does not have to compete in each event. Only one time per child is recorded during an event.

**Task 3 – Updating the children's data and identifying the fastest child for each age range**

Extend your algorithm to update the number of runs and the PB time if necessary for every child completing the junior park run event. Check if any half- or full-marathon wristbands need to be awarded. Output the names and the type of wristbands. Output the names and the time of the fastest child at this event for each of the age ranges 4 to 6, 7 to 10 and 11 to 14.