The Problem

The problem for which we will design a solution is 'To develop a small management system for an athletic club for organizing a marathon.'

The 'GetFit' Athletic Club is organizing their first international marathon in the spring of next year. A field comprising both world-ranking professionals and charity fund-raising amateurs (some in fancy dress!) will compete on the 26.2 mile route around an attractive coastal location. As part of the software system which will track runners and announce the results and sponsorship donations, a model is required which represents the key characteristics of the runners (this will be just part of the finished system).

Each runner in the marathon has a number. A runner is described as e.g. "Runner 42" where 42 is their number. They finish the race at a specified time recorded in hours, minutes and seconds. Their result status can be checked and will be displayed as either "Not finished" or "Finished in hh:mm:ss".

Every competitor is either a professional runner or an amateur runner.

Further to the above, a professional additionally has a world ranking and is described as e.g. "Runner 174 (Ranking 17)".

All amateurs are fundraising for a charity so each additionally has a sponsorship form. When an amateur finishes the race they print a collection list from their sponsorship form.

A sponsorship form has the number of sponsors, a list of the sponsors, and a list of amounts sponsored. A sponsor and amount can be added, and a list can be printed showing the sponsors and sponsorship amounts and the total raised.

A fancy dress runner is a kind of amateur (with sponsorship etc.) who also has a costume, and is described as e.g. "Runner 316 (Yellow Duck)".

Do the following activities among your group.

Activity 1: Read the description to identify the nouns and verbs.

Activity 2: Sort and Eliminate duplicates and streamline the list further.

Activity 3: Identifying the Synonyms and group them.

Activity 4: Finalize the domain classes.

Activity 5: Write the attributes and behavior for those classes.

Solution

Activity 1:

Nouns :- GetFit Althletic Club, field, world ranking professional, fund-raising amateur, fancy dress, 26.2 mile route, coastal location, software system, runner, result, sponsorship donation, model, key characteristic, a number, time, result status, competitor, professional runner, amateur runner, world ranking, charity, sponsorship form, collection list, sponsor, sponsorship amount, total raised, costume.

Verbs :- Organise, marathon, compete, track runners, announce results, describe (runner), finish race, specify time, check status, display status, describe (professional), print collection list, add (sponsor and amount), print list, describe (fancy dress runner)

Activity 2:

Things outside the scope of the system

Nouns :-

- GetFit Althletic Club – this is the client for whom the system is being developed. It is not an entity we need to model within the system.
- Coastal location – the location of the run is not relevant to the functionality of the system as described. Again we do not need to model this as an object within the system.
- Software system – this is the system we are developing as a whole it does not describe an entity within the system.

Verbs :-

- Organise – this is an activity done by members of the athletic club, these may be users of the system but this is not an activity that they are using the system for.
- Marathon – this is what the runners are doing. It is not something the system needs to do.

Activity 3: : Identifying the Synonyms and group them.

Nouns :-

- world ranking professional=professional runner
- fund-raising amateur=amateur runner
- runner=competitor

Note runner is not a synonym of professional runner as some runners are amateurs.

Verbs :-

- marathon=compete
- check status=display status
- print collection list = print list
- finish race = record specified time

Activity 4: Finalize the domain classes.

Nouns that could indicate classes:-

- Runner (or Competitor)
- Amateur (or Amateur Runner)
- Professional (or similar)
- FancyDresser (or FancyDressAmateur or similar)
- Sponsorshipfrom