IN628 2019 Practical 13.1 – Logical Programming

1. **Exercise 1**

Consider the definition of the family relationship "cousins". Someone is your cousin if one of their parents and one of your parents are siblings. Assume you know the following facts:

* 1. Bob is Fred's parent
  2. Bob is Sally's parent
  3. Fred is Arthur's parent
  4. Sally is Matilda's parent

Using only this information, use Prolog to identify all the cousins in this family. You will need to define four facts and two rules. The rules define the relations siblings and cousins.

1. **Exercise 2**

You are putting together a 3-person team for a triathlon. You need a swimmer, a cyclist and a runner (they must be three different people). Your friends have various sporting abilities, as shown:

|  |  |
| --- | --- |
| **This friend** | **is a.....** |
| Anne | Cyclist, Swimmer |
| Bob | Cyclist, Runner |
| Carl | Cyclist |
| David | Swimmer |
| Ellen | Swimmer, Runner |
| Fred | Runner |

1. Write a Prolog program to find all possible teams.
2. Write a C++ program to find all possible teams.
3. Write a Python program to find all possible teams.
4. Make all three solutions as idiomatic as possible. That is, use the best features of each language for this computational context. Order the three languages from best to worst for this problem, and explain your decision.