FUNCTIONAL PROGRAMMING 2018

MOISE GABRIEL

QUESTION 4

(a)

```
> data Match = Match Team Int Team Int
> type Team = String
```

(b)

```
> teams :: [[Match]] -> [Team]
> teams = nodups. concat. map teamsDay

> teamsDay :: [Match] -> [Team]
> teamsDay [] = []
> teamsDay ((Match t1 a t2 b) : ms) = t1 : t2 : teamsDay ms

> nodups :: Eq a => [a] -> [a]
> nodups [] = []
> nodups (x:xs) = x : nodups (filter (/=x) xs)
```

(c)

```
> data Results = Results Team [(Int, Int)]
> extract :: [[Match]] -> Results
> exthact mss = map (result (concat mss)) (teams mss)

> result :: [Match] -> Team -> Results
> result [] team = Results team []
> result (m:ms) team = addGoals m team (result ms team)

> addGoals :: Match -> Team -> Results -> Results
> addGoals (Match t1 a t2 b) team (Results _ listGoals)
>     | t1 == team = Results team ((a,b) : listGoals)
>     | t2 == team = Results team ((b,a) : listGoals)
>     | otherwise = Results team listGoals
>
```

(d)

```
> type Weight = (Int, Int, Int)
```

They represent in order :

- the total number of points awarded
- the goal difference
- the number of goals scored

```
> weight :: Results -> Weight
> weight (Results _ []) = (0,0,0)
> weight (Results team (a,b):listGoals) = add (a,b) (weight (Results team listGoals))

> add :: (int,int) -> Weight -> Weight
> add (a,b) (points, dif, scored) = (points + x, dif + a-b, scored + a)
>     where x = if (a > b) then 3 else if (a==b) then 1 else 0
```