Computational Thinking

Prof. Madhavan Mukund
Department of Computer Science
Chennai Mathematical Institute

Prof. G. Venkatesh
Indian Institute of Technology Madras

Mr. Omkar Joshi
Course Instructor
IITM Online Degree Programme

Computational Thinking

Tutorial on pseudocode for list functions

List functions

- length(l)
- first(l)
- last(l)
- rest(l)
- init(l)
- member(l, e)

length(l)

e.g. length([20, 30, 40, 50, 10]) is 5

length(l) {

       count = 0

       foreach x in l {

              count = count + 1

       }

       return(count)

}

first(l)

e.g. first([20, 30, 40, 50, 10]) is 20

first(l) {

      foreach x in l {

            return(x)

      }

}

last(l)

e.g. last([20, 30, 40, 50, 10]) is 10

last(l) {

    foreach x in l {

        e = x

    }

    return(e)

}

rest(l)

e.g. rest([20, 30, 40, 50, 10]) is [30, 40, 50, 10]

```
rest(l) {
        found = False
        restList = []
        foreach x in l {
                if (found)  {
                        restList = restList ++ [x]
                }
                else {
                        found = True
                }
        }
        return(restList)
}
```

init(l)

e.g. init([20, 30, 40, 50, 10]) is [20, 30, 40, 50]

```
init(l) {
        found = False
        initList = []
        foreach x in l {
                if (found)  {
                        initList = initList ++ [prev]
                }
                else {
                        found = True
                }
                prev = x
        }
        return(initList)
}
```

member(l, e)

e.g. member([20, 30, 40, 50], 30) is True, member([20, 30, 40, 50], 10) is False

```
member(l, e) {
        foreach x in l {
                if (e == x) {
                        return(True)
                }
        }
        return(False)
}
```