COMP0020: Functional Programming

Lecture 15a

Lists, Trees and Graphs

(link to implementation issues)

Contents

- Answer to student query :
- Writing a function to traverse a cyclic graph

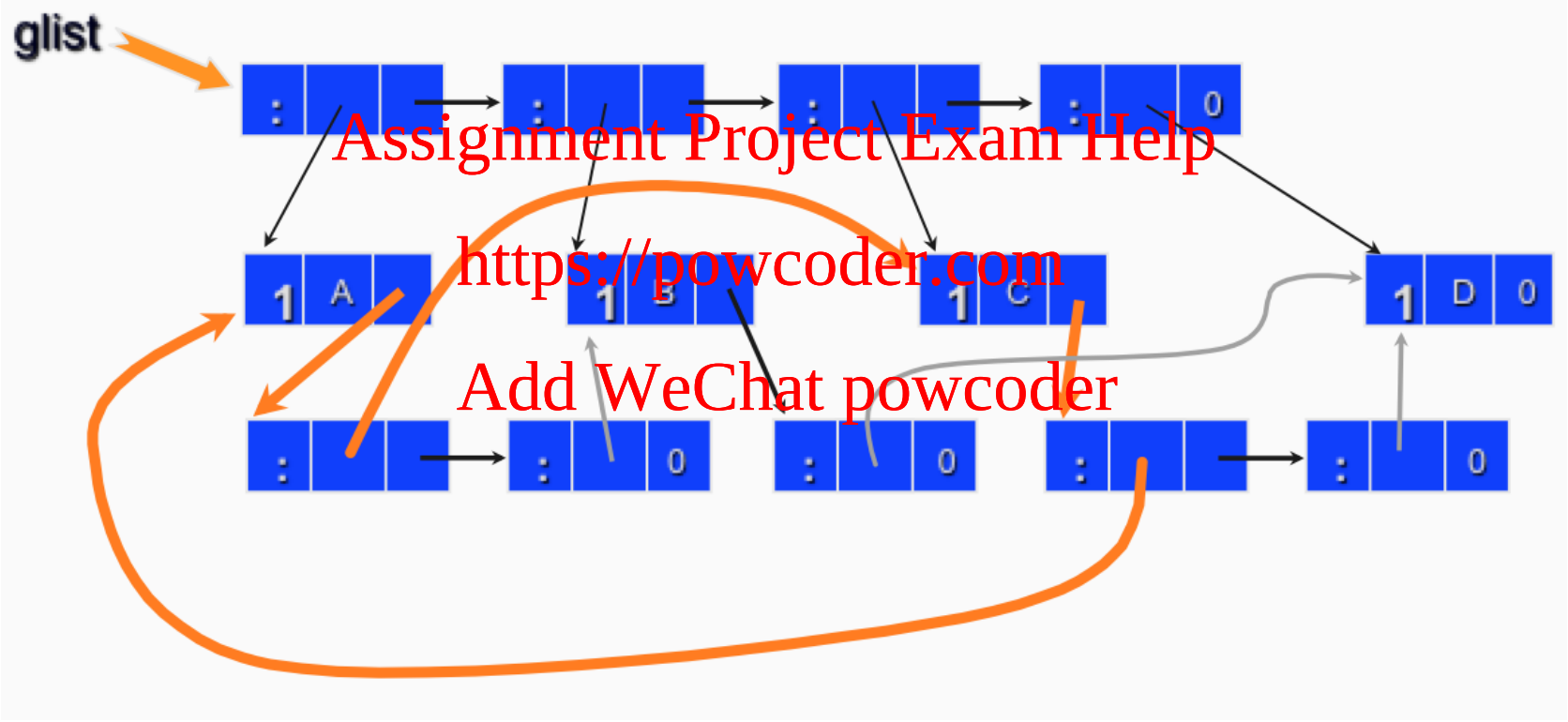
Graphs : source code


```
multitree * ::= Empty | Node * [multitree *]

graph :: multitree char
graph = hd glist

glist :: [multitree char]
glist = [Node 'A' [(glist ! 2), (glist ! 1)], Node 'B' [(glist ! 3)],
         Node 'C' [(glist ! 0), (glist ! 3)], Node 'D' []]
```

Graphs : representation after evaluating all links



Graphs : source code

```
printgraph :: multitree char -> [char]
printgraph Empty          = []
printgraph (Node x gs)    = "Node " ++ [x] ++ "[" ++ (xpg gs [x]) ++ "]"

xpg :: [multitree char] -> [char] -> [char]
xpg [] y                  = []
xpg [Empty] y             = "Empty"
xpg (Empty : gs) y        = "Empty, " ++ (xpg gs y)
xpg ((Node x ns) : gs) y  = "Node " ++ [x] ++ " seen" ++ s ++ (xpg gs y), if (member y x)
                          = "Node " ++ [x] ++ "[" ++ (xpg ns (x : y)) ++ z ++ (xpg gs (x : y)), otherwise
                            where s = "", if gs = []
                                    = ", ", otherwise
                                  z = " ]" ++ s
```

Summary

- Answer to student query :
- Writing a function to traverse a cyclic graph

END OF LECTURE

END OF ALL LECTURES