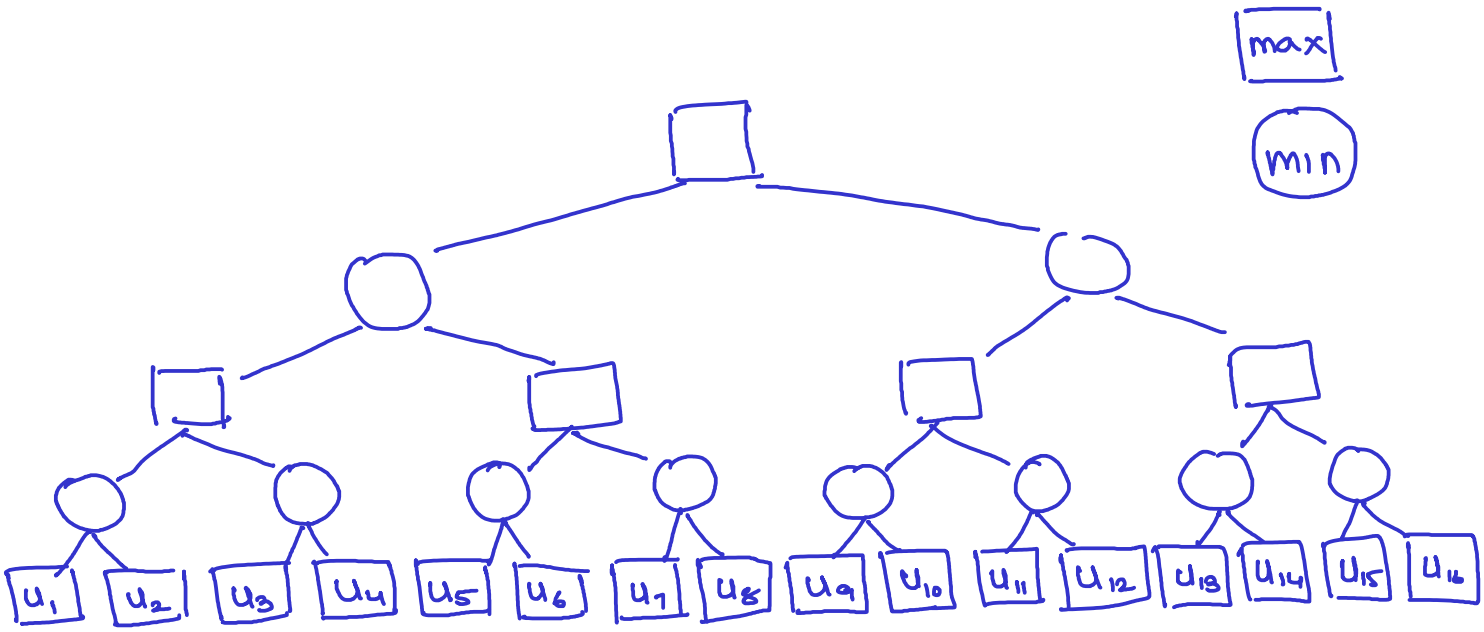
QUIZ - 1

Problem - 1

For a two player game, the corresponding game tree with leaf node utilities are as shown in figure below.



(I)

Find minimax value of the tree (root max node). The utilities $u_1 \ldots u_{16}$ are customized to your student ID.

- myUtilitiesTwoPlayerGame1.m is an octave/MaHab function that takes [studentID] as input and returns utilities $[u_1 \ldots u_{16}]$.

[8 points]

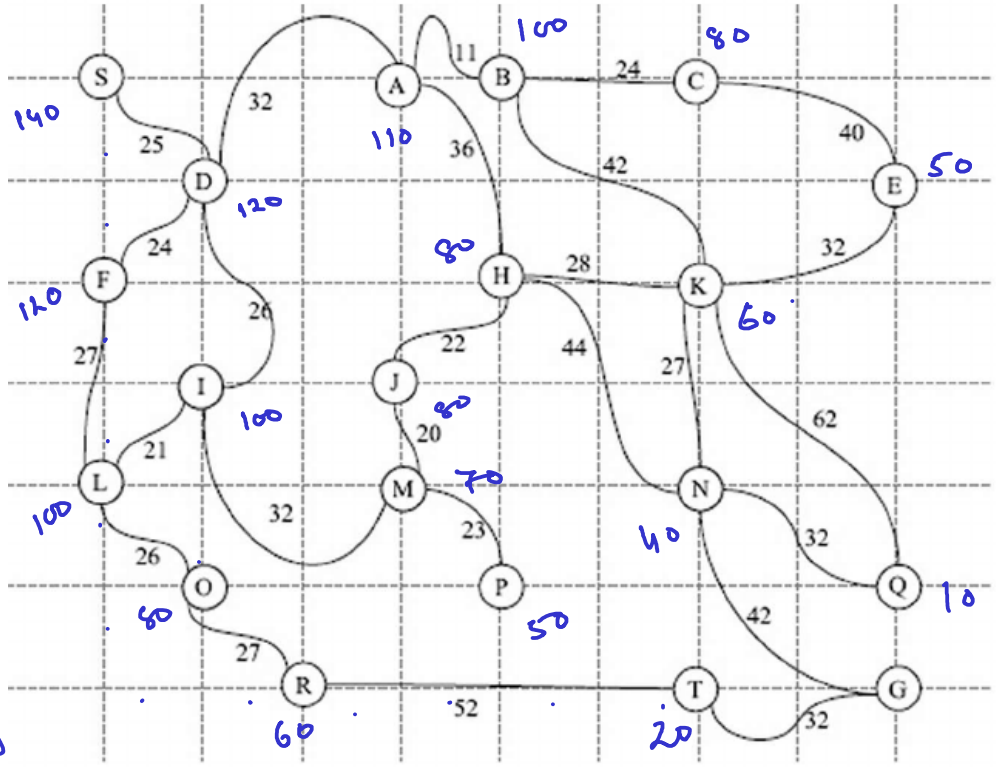
(II)

How many nodes did you generate while searching for minimax value following DFS?

[2 Points]

Problem 2

Try finding an optimal from source (S) to goal (G) by using



(I) Uniform-cost search

$f(n) = g(n) + \text{Const.}$

$g(n)$ — path cost to source

[5 pts]

(II) Hill Climbing

[Not to keep frontier]

$f(n) = h(n)$

$h(n)$ — heuristic - estimated distance to goal

[5 pts]

(edge weights are distances in kms)

(III) Best-First Search

$f(n) = h(n)$ [Maintain a frontier]

[5 pts]

(IV) A*

$f(n) = g(n) + h(n)$

[5 pts]

- Heuristic function: Manhattan distance
- Assume that each unit on the grid is 10kms.