# Max Expertise

You are given the hierarchy of a company represented by a directed tree of N nodes, where N is the number of employees.

Each has only one direct manager and possibly many indirect managers.

Each employee can manage many employees directly and indirectly.

Each employee has a Skill level A[x] and an expertise level.

The expertise level of an employee equals the count of employees y such that:

A[y]>A[x].In other words, skill level of employee y is strictly greater than the skill level of Employee X.

The employee x manages the employee y (directly or indirectly)

A Set of employees is a beautiful set if, none of the employees in the set manages the others directly or indirectly.

The expertise of the set equals, the sum of the expertise levels for all the employees in the set.

Find the maximum expertise of a beautiful set with size at most K.

Notes-

A tree is an undirected graph in which any two verticals are connected by exactly one path.

A directed tree is directed acyclic graph (DAG) Whose underlying Undirected graph is a tree.

The size of a set is the number of employees in the set.

**Function Description-**

Complete the CalculateMaxSetExpertise function in the editor below.

It has the following Parameters(s):

|  |  |  |
| --- | --- | --- |
| Name | Type | Description |
| N | INTEGER | The number of Employees. |
| K | INTEGER | The Maximum size of Set. |
| A | INTEGER ARRAY | The Skill of the Employees. |
| Parent | INTEGER ARRAY | The parent array,Which represents the directed tree.  It is guranteed that parent[1]equals –1 since it is the root of the tree and should have no parent. |

The function must return an INTEGER denoting the maximum expertise of a beautiful set with size at most K.

**Constraints-**

1≤N≤10^5

1≤K≤100

1≤A[I]≤10^5

-1≤Parent[I]≤N.

**Sample Test Cases-**

|  |  |  |
| --- | --- | --- |
| Input | Output | Output Description |
| 3  1  1  2  3  -1  1  2 | 2 | N=3  K=1  A=[1,2,3]  Parent=[-1,1,2]  We can choose a set that Contains only the first employee.  His expertise is 2 since he manages both the employees 2 and 3 and their skills is strictly greater than his skills. |
| 3  1  1  1  3  -1  1  2 | 1 | N=3  K=1  A=[1,1,3]  Parent=[-1,1,2]  We can choose a set that contains only the first employee His expertise is 1 since the manages employee 3 indirectly and A[3]>A[1] |
| 7  10  7  1  2  3  4  5  6  -1  1  1  2  3  4  5 | 4 | N=7  K=10  A=[7,1,2,3,4,5,6]  Parent=[-1,1,1,2,3,4,5]  We can choose the set {2,3}.The expertise of each of them is 2.and none of them manag es the other. |