# Question3

## Setup

There are N days, 3 activities.

For each day and each job

We assume represent the amount of enjoyment of day and activity.

## Subproblem

The subproblem is the maximum amount of enjoyment form first day to day.

represents the maximum of the sum of the enjoyment.

Using backtrack method, finding total enjoyment on last day.

## Recursion:

Using backtrack to find the sum of enjoyment on the last day. Then the max one is final solution.

## Base case

The base case

## Final solution

## Time complexity

## Example Case

There are 3 days, N = 3

|  |  |  |  |
| --- | --- | --- | --- |
|  | Day1 | Day2 | Day3 |
| Activity 1 | 5 | 2 | 9 |
| Activity 2 | 10 | 1 | 3 |
| Activity 3 | 9 | 3 | 15 |

Using the recursion function and using back track method.

Compare total employment on last day for each activity

We first find:

Then after the recursion we can get the answer for opt(3,1)

Do the same on opt(3,2) and opt(3,3)

We can get the sum of enjoyment for each steps.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Day1 | Day2 | Day3 |
| Activity 1 | 5 | 12  From(1,2) | 22  From(2,3) |
| Activity 2 | 10 | 10  From(1,3) | 16  From(2,3) |
| Activity 3 | 9 | 13  From(1,2) | 27  From(2,1) |

And the final answer is the maximum of them.

In this case the maximum total enjoyment is 27.