

Algorithm Design Term Project

1576 - Telephone Tariffs (146)

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Description

As we know there are 3 telephone tariffs in Yekaterinburg now: basic, combined and unlimited. For the people who like to talk a lot is recommended to take the unlimited tariff because it comes with unlimited number of calls. People who are less talkative are recommended for combined tariff as they get a few free minutes while they purchase their plans. And for the people who just have a phone to make calls (people with lower frequency of calls) are recommended to take the basic tariff and they are charged on the minutes they use.

Link to the Question - <http://acm.timus.ru/problem.aspx?space=1&num=1576>

The Technique and Program Runthrough

The technique used is called simple recursion.

The code asks user for the input of N1, N2, and N3 which is the predefined tariff from the phone providers. The code also asks for the input of C1, and C2 which are the charges applied to the minutes the person uses . There is another input T which is the total free

time combined user gets from their telephone plan. Also there is K which is the total number of calls made. Also we must take the input of the time of each calls. Eg- if K - 3 we have to enter timing of 3 calls in minutes and seconds.

Under the getInput() function as the name suggests, it is taking the input from the user and arranging it according to Timus Online Judge input pattern. This is needed because Timus reads the input only the way they provide in their example, if it is not the case your code will not be accepted for the Online Judge.

In order to compute the time, the processData() function is checking the conditions such as if the time is less than 6s the program ignores the execution of it. If the time is more than 6s then it gets rounded up to the next minute. For eg, if the time is 8mins and 15sec the times computed will return 9mins.

Under the calculateCost() function we have the main part. Under this if it is the case of N1 it is computing the total cost for the basicCost which is $(N1 + (C1 * \text{totalTimeInMins}))$.

For N2 which is the combined cost with minutes included is computer by subtracting T from it, T is the total time N2 users get for free in their telephone plans so we subtract the cost from it. $(N2 + (C2 * \text{totalTimeInMins} - T))$

For N3 it is simple because you get unlimited number of calls for a fixed cost and that cost has been provided by the users already so we just return N3 under unlimitedCost.

Program Solution on Timus

ID	Date	Author	Problem	Language	Judgement result	Test #	Execution time	Memory used
7638884	12:01:27 27 Nov 2017	Kevin Narang	1576. Telephone Tariffs	Python 3.6	Accepted		0.078	288 KB