

**2006/2007 SOUTHERN CALIFORNIA REGIONAL
ACM INTERNATIONAL COLLEGIATE PROGRAMMING CONTEST**

**Problem 1
Fly, Rent, or Drive Your Own?**

The Confusion State University business office has a policy that requires all staff traveling on business to use the most cost-effective mode of transportation possible. Cost-effective does not necessarily mean cheapest, however, as the cost of the time spent traveling is also taken into account. The State of Confusion has fairly good airline coverage, and reasonable roads, but the bus and rail transportation network leaves much to be desired in terms of availability and timely performance. Therefore, most travel of any significant distance comes down to a fly-or-drive decision.

It became apparent during a recent review of staff travel expenses that in some cases, it is less expensive to rent a car from the approved rental agency and pay for fuel than it is to pay for staff members to drive their personal vehicles at the IRS-approved standard mileage rate. This provides a third alternative to consider when arranging travel. The business office has retained your team to develop a program that will select the most cost-effective mode of travel when arranging trips for staff members.

Input to your program will be a series of round-trip requests. Each round-trip request will contain the following information on three lines, with fields separated from each other by single spaces:

1. The first line will contain a trip name (a string of 1 to 31 upper and lower-case letters, digits, and hyphens), the total one-way road mileage as an integer, and the effective hourly pay rate for the staff member in dollars and cents.
2. The second line will contain flight information: the cost of the round-trip ticket (in dollars and cents), the total one-way flight duration (in whole minutes), the integer number of miles to the airport (in the event a traveler drives his/her personal car to the airport), the total cost of airport parking (in dollars and cents), and the cost of a round-trip shuttle as an alternative to driving to/from and parking at the airport (also in dollars and cents).
3. The third line will contain rental car costs: the total rental charges (in dollars and cents) and the per-gallon cost of gasoline (also in dollars and cents).

Your program is to compute the estimated total round-trip costs for flying, driving a rental car, and driving a personal vehicle (taking into account the cost of the time spent traveling in each case). Your program is to make the following assumptions:

- When staff members drive on trips (other than to and from airports), their average speed is 55 miles per hour.
- The IRS-approved reimbursement rate is 44.5 cents per mile.
- For flying trips, the travel time each way will be the sum of the actual flying time, the time to get to/from the originating airport, and a two hour allowance. The two hour allowance covers the time spent at airports at each end of the trip along with destination ground transportation.
- The travel time to/from the originating airport is to be calculated using an average in-city speed of 40 miles per hour. Originating airport travel time is the same whether a traveler drives and parks his/her personal car or if a shuttle is used. A traveler should use the shuttle if it is cheaper than driving to and from the airport and paying parking charges.
- You may assume that the flying time is the same on the outbound and return trips.
- If a traveler flies, assume destination ground transportation will be taken care of at no cost (e. g., free hotel shuttle).
- The State authorizes the use of compact rental cars that average 25 miles per gallon in actual use. The review showed that the average added time to rent, refuel, and return a rental car is one hour per trip.

For each trip, your program should print one line containing the name of the trip followed by a colon and a single space, an upper-case letter representing the most cost-effective mode of transportation (either "F" for flying, "R" for using a rental car, or "D" for driving a personal vehicle), a single space, and the total travel charges of the selected option that will appear on the expense report (that is, not including the staff member's pay for the duration of travel). The travel charges are to be printed in dollars and cents with a dollar sign before the leading digit.

All costs being equal, travelers prefer to drive their own vehicles over the other options, and prefer renting a car to flying.

Problem 1
Fly, Rent, or Drive Your Own? (continued)

Sample Input

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Campus-Visit 222 26.50
310.20 67 22 36.00 67.00
109.08 2.25
Management-Visit 709 52.00
250.00 120 22 48.00 67.00
184.79 2.35
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Output for the Sample Input

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Campus-Visit: R $149.04
Management-Visit: F $317.00
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