

**COMPUTER SCIENCE 171
MACHINE PROBLEM 3 -
DUE March 11, 2015 (beginning of class)**

Skills needed: while loop, logical expressions, nested if-else statements

Your assignment for MP3 is to calculate the monthly bill for a cell phone user given the following rate structure. Note that this is a simpler structure than in real life – you do NOT have to be concerned about whether it is a weekday or a weekend, just whether the call is made during the day or the night.

1. All evening and night calls that begin from 6pm (exactly) up to and including 5:59am are free and there is no limit on these minutes used. As long as the call starts before 6am (even if it lasts until after 6am) it is counted as a night time call.
2. The basic monthly rate is \$39.99 which includes the first 200 minutes of daytime calls (from 6am up to and including 5:59pm). These can be within the calling area or long distance. If a call begins before 6pm and lasts until after 6pm, the entire call is treated as a daytime call.
3. As soon as the 200 minutes have been used, there is a charge for daytime calls at the rate of \$0.29 per minute if the call is within the area, or \$0.69 per minute for long distance. For the one call that begins before the 200 minutes have been used but lasts until over the 200 minutes, only the portion over the 200 minutes is charged. All subsequent daytime calls are charged for the entire duration of the call. Again, if a call begins in the daytime period and is subject to charge, the entire duration is chargeable (as above).

Your task is to read in a series of calls, calculate the cost of each call (if any), and find the total bill for the month.

More specifically, your program must read in a series of phone calls from a data file that we have made for you and put on class website. This file is arranged with the information about each call on a separate line. This information is:

The time of day that the call started (using an int to represent a 24 hour clock), the duration of the call in minutes (int), and a char for the type of call - A for a call within the area, L for a long distance call. E.g. the line

1830 20 A

means that the call started at 6:30pm, lasted for 20 minutes and was within the calling area.

You may assume that there will be no bad data in the file. Note also that for times before 10am, there are no leading zeros. (C++ treats int's with leading zeros as octal values).

Use your browser to view http://www.ha19k.com/cps171/MP3cellphone_dat.htm

Cut-and-paste from the screen and put it in the project folder that contains your program and call it `MP3cellphone.dat`. If you are working at home, don't forget to copy this to your thumbdrive or email.

SUGGESTION

You should design, compile, run and debug your program in stages.

1. You might start by testing if your program can just read and echo the data file.
2. After this is working accurately, write the code to determine whether the call is a day or night one.
3. Finally, add the code to determine whether the call will incur a charge, how many minutes will be charged, the cost of the call and the total bill for the month.

Remember to use good style with consistent indentation, plenty of comments, good variable names etc. and don't forget to echo the data as it is read. The output must be clear and readable with appropriate string constants and spacing.

Sample output from the first few lines of the data file follows:

Cellphone charges - MP3 by J.Remen

Time	Duration	Type of call	Minutes used so far	Cost
1100	30	L	30	\$0.00
2230	20	A	Night call is free	
1200	100	A	130	\$0.00
0559	40	L	Night call is free	
1530	60	L	190	\$0.00
0800	15	A	205	\$1.45