

COP 3344 Introduction to Unix, Fall 2007

Assignment 3

Due 5 Nov 2007, 10 pm

Note: All questions require you to work on a computer. The submission procedure, including tar-ing and gzip, is worth 10 points.

1. (70 points) In this assignment, you will first write a shell script, named `myacct`, that helps you maintain accounts¹. Assume that a file called `Main.dat` contains records for your purchases. Each record is on a separate line in `Main.dat`. It has the following fields, in the following order, separated by one or more spaces or tabs: (i) *item name* (a word), (ii) *category* (a word, only lower case letters), (iii) *month* (a number between 1 and 12), (iv) *date* (a number between 1 and 31), (v) *year* (a four-digit number), (vi) *Number of items* (an integer greater than 0), and (vii) *Cost per item* (an integer – assume that we will account only for expensive things, and so only the dollars matter; the cents don't). For example, we may have the following three records:

```
Basketball sports 10 29 2007 2 5
Candy food 10 28 2007 1 2
Car transportation 10 31 2007 1 20000
```

The shell script `myacct` will provide three different features, as explained below.

A. `./myacct create [category]`

(i) If a category is specified, then `myacct` will create a file name `category.act`. This file will contain all the records from `Main.dat` which have their second field equal to `category`. For example, with the records shown above, entering: `myacct create food` will create a file called `food.act`, which contains the single record for `Candy` shown above. Any existing file `food.act` will be over-written.
(ii) Calling `myacct create`, without any additional command line arguments, will create a `.act` file for each distinct category that appears in a record in `Main.dat`. Before doing that, it will delete all `.act` files in the current working directory.

B. `./myacct [-i -m -d -y -n -c] -cat category`

This prints certain fields from each record in the `category.act` file. The fields are specified by the following options to this command: `-i`: *item name*, `-m`: *month*, `-d`: *date*, `-y`: *year*, `-n`: *number of items*, `-c` *cost per item*. The fields specified on the command line should be printed in the order in which they are given in the command line. In addition, the following value should be printed for all the records, as the last field: *total cost of the item* (this needs to be calculated). For example, if a `sports.act` file exists for the data shown above, then

```
./myacct -i -y -cat sports
will print the following
Basketball 2007 10
```

2. (20 points) Write a `Makefile`, so that typing `make` will create `.act` files only for those categories whose `.act` file are older than `Main.dat`. For this question, (but not for question 1), you may assume that only the following categories are permitted: (i) `food`, (ii) `clothing`, (iii) `housing`, (iv) `transportation`, (v) `education`, and (vi) `entertainment`.

¹ You may write additional shell scripts that help you with `myacct`. Please make sure that you include these additional shell scripts in the archive that you submit.

Bonus points: (10 points) Include the following additional feature for question 1. Please email Andre to let him know that you have attempted the bonus question.

C. `./myacct [-i -m -d -y -n -c] -date month date year`

This prints certain fields from each record for a purchase made on the specified date in each `category.act` file (this can differ from the records in the `Main.dat` file). It first prints the `category`. The last field printed is the `total cost` of the item. The remaining fields are specified by the following options to this command: `-i`: *item name*, `-m`: *month*, `-d`: *date*, `-y`: *year*, `-n`: *number of items*, `-c`: *cost per item*. These fields should be printed in the order in which they are given on the command line.

Submission instructions

1. All your files should be under a directory called HW3
2. Create a tar file containing HW3 and all the files under it. This tar file should be called `HW3.tar`
3. Compress `HW3.tar` using `gzip`, to create the file `HW3.tar.gz`
4. Login in to blackboard and select the *Intro. to Unix* course
5. Click on *Student Tools*
6. Click on *Digital Dropbox*
7. Click on *Add File*
8. In the field *Name*, write your name and the number of the assignment
9. In the field *File*, write the path to your file `HW3.tar.gz` (or browse it using the browse button)
10. Write comments in the *comments* field if you need to
11. Click *Submit* and then Click *OK* in the popup window
12. Click on *OK* in the receipt page
13. Click on *Send File*
14. On the *Select Field* list, select the file you need to send
15. Click on *Submit*
16. Click *OK* on the receipt page

Note: If you don't do all these steps, then your file will not be sent! *We strongly suggest that you submit the assignment at least a day in advance, so that you will have time to fix any problems that arise. Also, please do not modify any of your original homework files, so that we will have a correct time stamp to look at, if there are problems with your submission.*