Programming Project 08

Update 3/26: Test 2 and get_data by column were updated. **Update 3/21:** a number of suggestions were added.

This assignment is worth 55 points (5.5% of the course grade) and must be **completed and turned in before 11:59 on Monday, March, 30th**

Assignment Overview

- Dictionaries and Lists
- File manipulation

Assignment Background

Video games have become an outlet for artists to express their creative ideas and imaginations and a great source of entertainment for people who seek a fun and accessible ways to immerse in unique worlds while also share and interact with others. This project will print video game sales data for various platforms across the years. From the old school consoles like Atari 2600 and Sega Genesis to more modern ones like the Xbox One and PlayStation 4.

Project Specifications
You must implement the following functions:

`open_file () → file pointer:`

a. This function repeatedly prompts the user for a filename until the file is opened successfully. An error message should be shown if the file cannot be opened. It returns a file pointer. Use `try-except` and `FileNotFoundError` to determine if the file can be opened. Use the `'utf-8'` encoding to open the file.

```
fp = open(filename, encoding ='utf-8')
```

b. Parameters: none
c. Returns : file pointer

`read_file (fp) → D1,D2,D3:`

a) This function read a file pointer and returns 3 dictionaries:
   - Parameters: `file pointer (fp)`
   - Returns : `3 dictionaries of list of tuples`
   - The function displays nothing

b) You must use the `csv.reader` because some fields have commas in them.

c) Each row of the file contains the name of a video game, the platform which it was released, the release year, the genre (i.e. shooter, puzzle, rpg, fighter, etc.), the publishing company, and regional sales across north America, Europe, Japan, and other regions. For this project, we are only interested in the following columns:

```
name = line[0]
platform = line[1]
year = int(line[2])
genre = line[3]
publisher = line[4]
na_sales = float(line[5])
europe_sales = float(line[6])
japan_sales = float(line[7])
other_sales = float(line[8])
```

d) **All strings should be converted to lower case and stripped of the trailing/forward white spaces.**

e) **Multiply each regional sales column by 1,000,000.** The program must compute the total global sales by adding all the regional sales (`na_sales, europe_sales, japan_sales, other_sales`).

f) This function returns 3 separate dictionaries. The first dictionary, with `'name'` as key, will contain the data used to display the global sales per year or platform. The second dictionary, with `'genre'` as key, contains the data used to display the regional sales per genre. The third dictionary, with `'publisher'` as key, contains the data used to display the global sales by publisher. All of 3 dictionaries have a list of tuples as values:

```
D1 = { name:[(name, platform, year, genre, publisher,
      global_sales), …], …}
D2 = { genre: [(genre, year, na_sales, eur_sales,
      jpn_sales, other_sales, global_sales), …], …}
D3 = {publisher: [(publisher, name, year, na_sales,
      eur_sales, jpn_sales, other_sales, global_sales),
      …], …}
```

You should ignore all the values that are not valid:
- `'year'` should be integer (`int`)
- All regional sales should be floats (`floats`).

g) Once the file is read and all the data is stored in the 3 dictionaries, you need to sort each dictionary alphabetically in ascending order by their keys. The values for the 3 dictionaries should also be sorted by the last element of the tuples in reverse order (`global_sales`).

Hint: Dictionaries are insertion sorted meaning the order of insertion into the dictionary is preserved. You should first get all the keys of a dictionary and sort them. Then iterate through the sorted list of keys and insert their corresponding values into a new dictionary. You should sort the values before inserting them.

`get_data_by_column(D1, indicator, c_value)` → `List of tuples:`

a) This function iterates through the dictionary D1 and return a subset of the data as indicated in (b) below.
   - Parameters: `Dictionary (D1), indicator (str), c_value (str or int)`
   - Returns : `List of tuples`
   - The function displays nothing

b) The `indicator` parameter is a string with two values: `'year'` or `'platform'`. If indicator equals to `'year'`, append all tuples whose value at the year column is equal to `c_value` into the new list. Sort the new list by global sales (`global_sales`) in descending order and then by the platform alphabetically.
   If indicator equals to `'platform'`, append all tuples whose value at the platform column is equal to `c_value` into the new list. Sort the new list by global sales (`global_sales`) in descending order and then by the year in ascending order.

c) If the `c_value` does not exist in the data, the function should return an empty list.

`get_publisher_data(D3, publisher)` → `List of tuples:`

a) This function iterates through the dictionary D3 (which contains the publisher data with publisher as the D3 key). It will return a list of all tuples where the publisher key equals the `publisher` parameter.
   - Parameters: `Dictionary (D3), publisher (str)`
   - Returns : `List of tuples`
   - The function displays nothing

b) The list should be sorted by `name` alphabetically and by global sales (`global_sales`) in descending order. Since the sorted function and the sort method are stable sorts, you can first sort the `names` of the games alphabetically, and then sort them by global sales (with `reverse=True`). (You do the two sorts in that order because you do the primary key last, `global_sales` is the primary key in this case.) By default, sorting is done on the first item in a list or tuple. To sort on other items use `itemgetter` from the `operator` module.

display_global_sales_data(L1, indicator)

a) This function prints a table of all the global game sales stored in `L1` by either all platforms in a single year or all years for a single platform. This function does not return anything.
   - Parameters: `List of tuples(L1), indicator (str)`
   - Returns : `nothing`

b) The list of tuples (`L1`) is the list returned from the `get_data_by_column()` function.

c) The `indicator` parameter is a string with two values: `'year'` or `'platform'`.
   If indicator equals to `'year'`, display the video game sales in one year ('Name', 'Platform', 'Genre', 'Publisher', 'Global Sales').
   If indicator equals to `'platform'`, display video game sales for that platform ('Name', 'Year', 'Genre', 'Publisher', 'Global Sales').

   For all the cases, the header row uses the following format:
   `"{:30s}{:10s}{:20s}{:30s}{:12s}"`
   The following rows uses the following string formatting:
   `"{:30s}{:10s}{:20s}{:30s}{:<12,.02f}"`
   Truncate (using slicing) the name and publisher to 25 characters, and the genre to 15 characters.

d) The sum of total global sales should be calculated and displayed. The following string formatting should be used to display the total:
   `"\n{:90s}{:<12,.02f}"`

get_genre_data(D2, year) → List of tuples:

a) This function iterates through the dictionary `D2` (which contains the list of regional sales by genre) and return a list of the total regional sales per genre whose value at the year column is equal to `'year'`.
   - Parameters: `Dictionary (D2), year (int)`
   - Returns : `List of tuples`

b) The list of tuples should include the following information:
   `[(genre, count, total_na_sales, total_eur_sales, total_jpn_sales, total_other_sales, total_global_sales), …],`
   Where:
   `genre:` genre name
   `count:` number of games per genre (or number of occurrences of `genre` in that year)
   `total_na_sales:` total sales in North America

`total_eur_sales:` total sales in Europe
`total_jpn_sales:` total sales in Japan
`total_other_sales:` total sales in other regions
`total_global_sales:` total sales in all regions

c) Before returning the list, sort the extracted data by genre name alphabetically and then sort this data by global sales in descending order.
d) If the `year` does not exists in the data, the function should return an empty list.
e) Hint: check the `count` (index 1 of your tuple) before appending a tuple onto your genre list. If the `count` is zero, do not append it.

display_genre_data(genre_list):

a) This function prints a table of all the total regional sales for each genre stored in `genre_list`. This function does not return anything.
f) Parameters: `genre_list(list)`
g) Returns : `nothing`

b) The list of tuples (`genre_list`) is the list returned from the `get_genre_data()` function (which was called in `main` under Option 3).
c) The header row (provided in the skeleton code) uses the following format:
`"{:15s}{:15s}{:15s}{:15s}{:15s}{:15s}"`
The following rows uses the following string formatting:
`"{:15s}{:<15,.02f}{:<15,.02f}{:<15,.02f}{:<15,.02f}{:<15,.02f}"`

d) The sum of total global sales should calculated and be displayed. The following string formatting should be used to display the total:
`"\n{:75s}{:<15,.02f}"`

display_publisher_data(pub_list):

a) This function prints a table of all the total regional sales for each genre stored in `pub_list`. This function does not return anything.
h) Parameters: `pub_list(list)`
i) Returns : `nothing`

b) The list of tuples (`pub_list`) is the list returned from the `get_ publisher_data()` function.
c) The header row uses the following format:
`"{:30s}{:15s}{:15s}{:15s}{:15s}{:15s}"`
The following rows uses the following string formatting:
`"{:30s}{:<15,.02f}{:<15,.02f}{:<15,.02f}{:<15,.02f}{:<15,.02f}"`

Note: "Title" in the header refers to `name` in the tuple in `pub_list`, i.e. index 1, and it must be truncated to 25 characters (Hint: slice).

d) The sum of total global sales should be calculated and displayed. The following string formatting should be used to display the total:

```
"\n{:90s}{:<15,.02f}"
```

get_totals(L, indicator) → List, List:

a) This function receives a list L of tuples with global sales that was generated by the **get_data_by_column** function. As in that function, there are two values for `indicator`: `"year"` a list of global sales per platform for a single year (from Menu option 1 in `main`) or `"platform"` a list of global sales per year for a single platform (from Menu option 2 in `main`). The function returns two lists: L1, the one with the strings of each platform name (if `indicator == "year"`) or the integers of each year (if `indicator == "platform"`), and the other, L2, is the corresponding global sales. (These two lists will be used for plotting in option 1 and 2.)
- Parameters: `L (List), indicator (str)`
- Returns : `List, List`
- The function displays nothing

b) You need to collect global sales for each platform (or year). The easiest way to do that is with a dictionary with the key is platform (or year) and the value is the sales for that platform (or year). You then build a list, L1, of keys (platforms or years) and a list, L2, of their corresponding values (sales). The first list, L1, should be sorted by `platform` or `year` (depending on the value of `indicator`) in ascending order. L2 needs to have the corresponding values in the same order as L1. (Hint: create and sort L1 and then use the items in L1 and your dictionary of sales to build L2 such that the key:value relationship is maintained in L1:L2.) Return the lists as L1 first and then L2.

prepare_pie(L) → List, List:

c) This function receives a list of global sales per genre for a particular year (that is, the list L comes from a call to `get_genre_data` for a particular year, the call being done in option 3 of `main`). It returns two lists: L1, one with the strings of each genre name, and the other, L2, is total global sales in that year. These two lists will be used for plotting in option 3 so each genre name in list L1 has its corresponding total global sales in L2 at the same index.
- Parameters: `L (List)`
- Returns : `List, List`
- The function displays nothing

d) The list L2 should be sorted by `total_global_sales` in descending order and L1 should be sorted so the genre name corresponds with the total global sales in L2. Hint: create a list of tuples that you sort first by name and then by sales. Then create the separate lists L1 and L2.

`main()` :

a) This function is the starting point of the program. The program starts by opening the file with the video game sales and reading the data into three dictionaries. The program will repeatedly prompt the user to select an option from the following menu:

   i. **Option 1:** Display the global sales for all video game titles across multiple platforms in a single year. Prompt for a year (validation is required!, year needs to be an `int`), get the data by calling the `get_data_by_column` function, and then display the selected year's data if the year exists in the data. Prompt the user whether they want to plot the data. If the answer is `"y",` use `plot_global_sales()` to plot the histogram of the total global sales per publisher.

   ii. **Option 2:** Display the global sales for all video game titles across multiple years in a single platform. Prompt for a platform (validation is required!, cannot be a number)), get the data by calling the `get_data_by_column` function, and then display the selected platform data if the platform exists in the data. Prompt the user whether they want to plot the data. If the answer is `"y",` get lists to plot by calling the `get_totals` function, and then use `plot_global_sales()` to plot the histogram of the total global sales per year.

   iii. **Option 3:** Display the regional sales for all video game genres. Prompt for a year (validation is required!, year needs to be an `int`), call `get_genre_data`, and then display the selected year data if the year exists using `display_genre_data`. Prompt the user whether they want to plot the data. If the answer is `"y",` call `prepare_pie` to get the lists to plot, and then use `plot_genre_pie()` to plot a pie chart of the total global sales per genre.

   iv. **Option 4:** Display the regional sales for all the video games by publisher. Prompt the user for a keyword in the publisher. Search for all publishers who have that keyword as a substring, then display the results. **If there are multiple publisher names with the same string, enumerate all possible names**. The publisher names should appears alphabetically because they were read into the dictionary that way; if not, sort them. Use the following string formatting:

```
"{:<4d}{}".format(index,publisher)
```

Prompt the user for a publisher index from the displayed list (validation is required!; check that the publisher exists in D3) and display the selected publisher data.

v. **Option 5:** Stop the program.

If the user does not enter any of these options, the program needs to display an error message and prompt again until a valid option is selected.

2. Hints and Notes
   a) Need to print a header line? Using multiple string inside a format method, use the "*" operator to unpack the list. Unpacking is used with iterable items (e.g. lists, strings, and tuples) to take each individual value of the iterable and assign it to various argument positions. In other words, each element from the iterable becomes an individual value. For example:

```
lst = [“I”, “Love”, “Python!”]
print(“{} {} {}”.format(*lst)) # This prints: I love Python!
```

   b) Provided functions:
      a. plot_global_sales(x,y):
      This function creates bar plots when the user wants to process the global sales data by year or platform. It receives a list of publishers or years and a list of global sales. The bar plots the global sales for each publisher or year. It returns nothing.
      - Parameters: `x (List), y (List)`
      - Returns : `nothing`
      - The function displays nothing

      b. plot_genre_pie(genre, values): This function creates a pie plot when the user wants to process the global sales data by genre in a particular year. It receives a list of genres and a list of global sales for a year. It returns nothing.
      - Parameters: `x (List), y (List)`
      - Returns : `nothing`
      - The function displays nothing

Deliverables

The deliverable for this assignment is the following file:

`proj08.py` – the source code for your Python program

Be sure to use the specified file name and to submit it for grading via Mimir before the project deadline.

(See Mimir for function tests details)

Test Case 1:

```
Enter filename: video_game_sale_2016.csv
File not found! Please try again!

Enter filename: video_game_sales_2016.csv

Menu options

    1) View data by year
    2) View data by platform
    3) View yearly regional sales by genre
    4) View sales by publisher
    5) Quit

    Enter choice: 8
Invalid option. Please Try Again!

Menu options

    1) View data by year
    2) View data by platform
    3) View yearly regional sales by genre
    4) View sales by publisher
    5) Quit

    Enter choice: 1

Enter year: 1900
The selected year was not found in the data.

Menu options

    1) View data by year
    2) View data by platform
    3) View yearly regional sales by genre
    4) View sales by publisher
    5) Quit

    Enter choice: 2

Enter platform: sega
The selected platform was not found in the data.

Menu options

    1) View data by year
    2) View data by platform
    3) View yearly regional sales by genre
    4) View sales by publisher
    5) Quit

    Enter choice: 3

Enter year: xyz
```

```
Invalid year

Menu options

    1) View data by year
    2) View data by platform
    3) View yearly regional sales by genre
    4) View sales by publisher
    5) Quit

    Enter choice: 4

Enter keyword for publisher: gotta catch 'em all!
No publisher name containing "gotta catch 'em all!" was found!

Menu options

    1) View data by year
    2) View data by platform
    3) View yearly regional sales by genre
    4) View sales by publisher
    5) Quit

    Enter choice: 5

Thanks for using the program!
I'll leave you with this: "All your base are belong to us!"
```

Test Case 2:

```
Enter filename: video_game_sales_small.csv
Menu options

    1) View data by year
    2) View data by platform
    3) View yearly regional sales by genre
    4) View sales by publisher
    5) Quit

    Enter choice: 4
Enter keyword for publisher: act
There are 32 publisher(s) with the requested keyword!
0   activision
1   activision value
2   avalon interactive
3   bigben interactive
4   bmg interactive entertainment
5   disney interactive studios
6   dreamworks interactive
7   eidos interactive
8   empire interactive
9   focus home interactive
10  fox interactive
11  game factory
12  gremlin interactive ltd
13  gt interactive
14  hasbro interactive
15  hip interactive
16  idea factory
17  idea factory international
18  marvelous interactive
19  mattel interactive
20  mentor interactive
21  midas interactive entertainment
22  simon & schuster interactive
23  take-two interactive
24  tdk mediactive
25  time warner interactive
26  tripwire interactive
27  universal interactive
28  victor interactive
29  virgin interactive
30  warner bros. interactive entertainment
31  xicat interactive
Select the index for the publisher to use: 5

Video Games Sales for disney interactive studios
Title                       North America  Europe        Japan         Other         Global
epic mickey                 2,040,000.00   630,000.00    120,000.00    220,000.00    3,010,000.00
who wants to be a million   1,940,000.00   0.00          0.00          0.00          1,940,000.00
toy story mania!            1,040,000.00   660,000.00    0.00          180,000.00    1,880,000.00
disney infinity             970,000.00     340,000.00    0.00          130,000.00    1,440,000.00
disney infinity 3.0         240,000.00     370,000.00    0.00          120,000.00    730,000.00
disney infinity 2.0: marv   270,000.00     250,000.00    0.00          100,000.00    620,000.00
```

```
epic mickey: power of ill     360,000.00     40,000.00      40,000.00      40,000.00      480,000.00
pirates of the caribbean:     300,000.00     10,000.00      10,000.00      30,000.00      350,000.00
pirates of the caribbean:     230,000.00     10,000.00      0.00           20,000.00      260,000.00
that's so raven: psychic      230,000.00     0.00           0.00           20,000.00      250,000.00
the suite life of zack &      230,000.00     0.00           0.00           20,000.00      250,000.00
disney stitch jam             70,000.00      0.00           160,000.00     10,000.00      240,000.00
disney's a christmas caro     210,000.00     10,000.00      0.00           20,000.00      240,000.00
the chronicles of narnia:     150,000.00     40,000.00      0.00           10,000.00      200,000.00
disney's home on the rang     120,000.00     40,000.00      0.00           0.00           160,000.00
fantasia: music evolved       110,000.00     30,000.00      0.00           10,000.00      150,000.00
tim burton's the nightmar     100,000.00     40,000.00      0.00           0.00           140,000.00
walt disney pictures pres     90,000.00      30,000.00      0.00           0.00           120,000.00
disney planes fire & resc     10,000.00      80,000.00      0.00           10,000.00      100,000.00
disney's planes               40,000.00      30,000.00      0.00           10,000.00      80,000.00
tron 2.0: killer app          40,000.00      20,000.00      0.00           0.00           60,000.00

Total Sales
12,700,000.00
Menu options

    1) View data by year
    2) View data by platform
    3) View yearly regional sales by genre
    4) View sales by publisher
    5) Quit

    Enter choice: 5

Thanks for using the program!
I'll leave you with this: "All your base are belong to us!"
```

Test Case 3:

```
Enter filename: video_game_sales_2016.csv

Menu options

    1) View data by year
    2) View data by platform
    3) View yearly regional sales by genre
    4) View sales by publisher
    5) Quit

    Enter choice: 1

Enter year: 1999

                                   Video Game Sales in 1999
Name                          Platform  Genre               Publisher                     Global Sales
nfl 2k                        dc        sports              sega                          1,190,000.00
shenmue                       dc        adventure           sega                          1,180,000.00
seaman                        dc        simulation          sega                          520,000.00
sega rally championship 2     dc        racing              sega                          410,000.00
j-league pro soccer club      dc        sports              sega                          360,000.00
soulcalibur                   dc        fighting            namco bandai games            340,000.00
virtua striker 2              dc        sports              sega                          320,000.00
pro yakyuu team o tsukuro     dc        sports              sega                          230,000.00
tokyo xtreme racer            dc        racing              genki                         170,000.00
the king of fighters: dre     dc        fighting            snk                           100,000.00
blue stinger                  dc        adventure           activision                    100,000.00
marvel vs. capcom: clash      dc        fighting            capcom                        100,000.00
```

(To many titles to show in this document! See Mimir test for full view or “output3.txt”)

```
samurai shodown: warrios      ps       fighting            snk                           10,000.00
derby stallion                sat      sports              ascii entertainment           90,000.00
fire emblem: thracia 776      snes     strategy            nintendo                      260,000.00
digimon adventure: anode      ws       role-playing        namco bandai games            280,000.00
chocobo no fushigi dungeo     ws       role-playing        namco bandai games            180,000.00

Total Sales                                                                              251,110,000.00

Do you want to plot (y/n)? n

Menu options

    1) View data by year
    2) View data by platform
    3) View yearly regional sales by genre
    4) View sales by publisher
    5) Quit

    Enter choice: 2

Enter platform: gen

                                   Video Game Sales for gen
Name                          Year     Genre               Publisher                     Global Sales
streets of rage               1990     action              sega                          2,600,000.00
sonic the hedgehog            1991     platform            sega                          4,330,000.00
sonic the hedgehog 2          1992     platform            sega                          6,020,000.00
mortal kombat                 1992     fighting            arena entertainment           2,670,000.00
nba jam                       1992     sports              arena entertainment           2,050,000.00
street fighter ii': speci     1992     fighting            sega                          1,650,000.00
gunstar heroes                1992     shooter             sega                          130,000.00
ecco the dolphin              1992     adventure           sega                          120,000.00
shining force ii              1993     strategy            sega                          190,000.00
super street fighter ii       1993     fighting            capcom                        150,000.00
ecco: the tides of time       1993     adventure           sega                          70,000.00
street fighter ii': speci     1993     action              capcom                        70,000.00
streets of rage 3             1993     action              sega                          70,000.00
dynamite headdy               1993     platform            sega                          50,000.00
beyond oasis                  1993     role-playing        sega                          50,000.00
sonic & knuckles              1994     platform            sega                          1,820,000.00
sonic the hedgehog 3          1994     platform            sega                          1,760,000.00
disney's the lion king        1994     platform            virgin interactive            1,420,000.00
mortal kombat 3               1994     fighting            acclaim entertainment         1,340,000.00
nba jam tournament editio     1994     sports              acclaim entertainment         1,120,000.00
virtua racing                 1994     racing              sega                          260,000.00
lunar 2: eternal blue(sal     1994     role-playing        game arts                     140,000.00
yuu yuu hakusho: makyo to     1994     fighting            sega                          80,000.00
dragon slayer: the legend     1994     role-playing        sega                          80,000.00
j-league pro striker 2        1994     sports              sega                          40,000.00
castlevania bloodlines        1994     platform            konami digital entertainm     40,000.00
puzzle & action: tant-r       1994     misc                sega                          30,000.00

Total Sales                                                                              28,350,000.00

Do you want to plot (y/n)? n

Menu options

    1) View data by year
    2) View data by platform
    3) View yearly regional sales by genre
    4) View sales by publisher
    5) Quit

    Enter choice: 3

Enter year: 2016

Regional Video Games Sales per Genre
Genre          North America  Europe         Japan          Other          Global
shooter        16,240,000.00  15,900,000.00  1,060,000.00   5,020,000.00   38,220,000.00
action         9,290,000.00   10,680,000.00  7,070,000.00   3,070,000.00   30,110,000.00
sports         7,540,000.00   12,010,000.00  920,000.00     3,020,000.00   23,490,000.00
role-playing   5,890,000.00   4,280,000.00   6,610,000.00   1,400,000.00   18,180,000.00
fighting       1,840,000.00   1,340,000.00   750,000.00     540,000.00     4,470,000.00
adventure      950,000.00     1,320,000.00   1,180,000.00   370,000.00     3,820,000.00
platform       1,290,000.00   1,390,000.00   110,000.00     440,000.00     3,230,000.00
racing         730,000.00     1,770,000.00   10,000.00      280,000.00     2,790,000.00
misc           760,000.00     660,000.00     1,040,000.00   140,000.00     2,600,000.00
simulation     160,000.00     1,270,000.00   330,000.00     130,000.00     1,890,000.00
strategy       240,000.00     590,000.00     230,000.00     70,000.00      1,130,000.00
puzzle         0.00           10,000.00      0.00           0.00           10,000.00

Total Sales                                                                129,940,000.00

Do you want to plot (y/n)? n

Menu options

    1) View data by year
    2) View data by platform
    3) View yearly regional sales by genre
    4) View sales by publisher
    5) Quit

    Enter choice: 5

Thanks for using the program!
I'll leave you with this: "All your base are belong to us!"
```

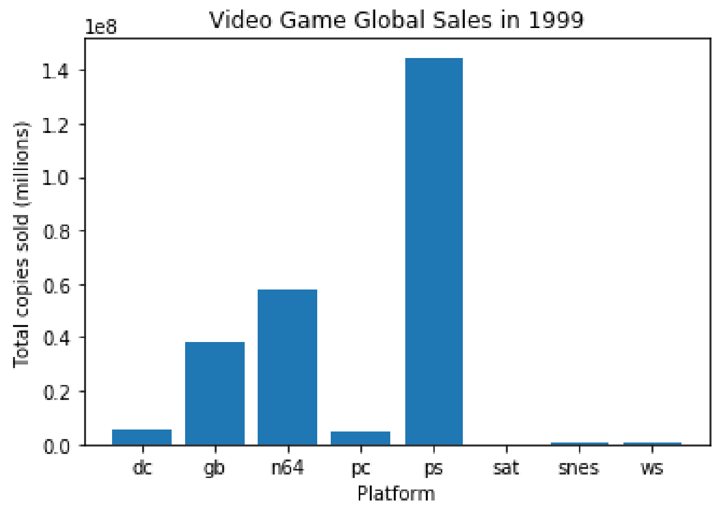
Test Case 4:

```
Enter filename: video_game_sales_2016.csv

Menu options

    1) View data by year
    2) View data by platform
    3) View yearly regional sales by genre
    4) View sales by publisher
    5) Quit

    Enter choice: 1

Enter year: 1999
```

```
                           Video Game Sales in 1999
Name                         Platform  Genre               Publisher                      Global Sales
nfl 2k                       dc        sports              sega                           1,190,000.00
shenmue                      dc        adventure           sega                           1,180,000.00
seaman                       dc        simulation          sega                           520,000.00
sega rally championship 2    dc        racing              sega                           410,000.00
j-league pro soccer club     dc        sports              sega                           360,000.00
soulcalibur                  dc        fighting            namco bandai games             340,000.00
virtua striker 2             dc        sports              sega                           320,000.00
pro yakyuu team o tsukuro    dc        sports              sega                           230,000.00
tokyo xtreme racer           dc        racing              genki                          170,000.00
the king of fighters: dre    dc        fighting            snk                            100,000.00
blue stinger                 dc        adventure           activision                     100,000.00
marvel vs. capcom: clash     dc        fighting            capcom                         100,000.00
```

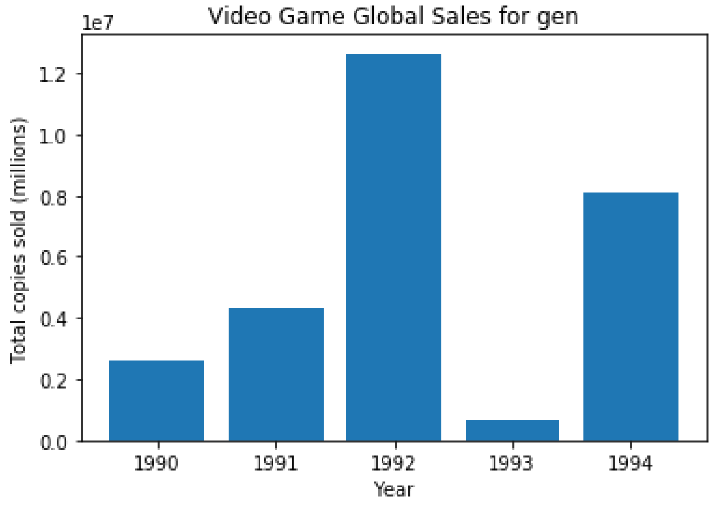
(To many titles to show in this document! See Mimir test for full view or “output4.txt”)

```
builder's block              ps        strategy            eon digital entertainment      10,000.00
samurai shodown: warrios     ps        fighting            snk                            10,000.00
derby stallion               sat       sports              ascii entertainment            90,000.00
fire emblem: thracia 776     snes      strategy            nintendo                       260,000.00
digimon adventure: anode     ws        role-playing        namco bandai games             280,000.00
chocobo no fushigi dungeo    ws        role-playing        namco bandai games             180,000.00

Total Sales                                                                               251,110,000.00

Do you want to plot (y/n)? y
```



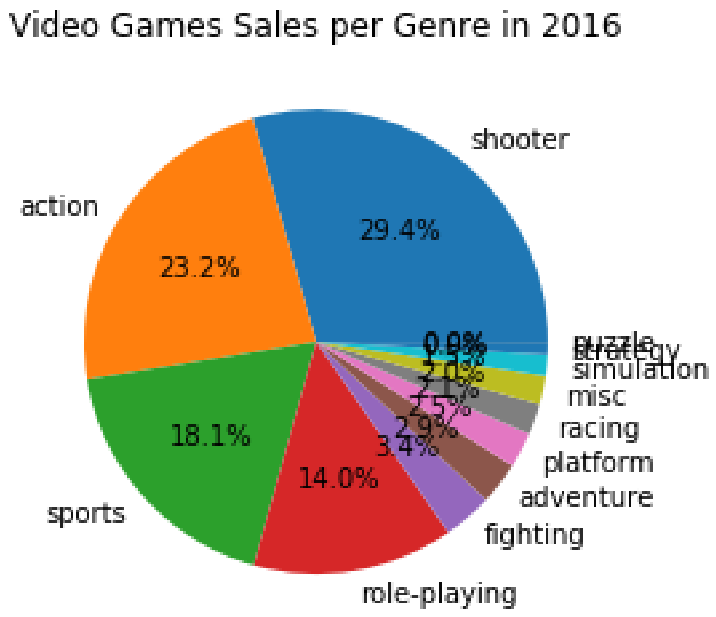
```
Menu options

    1) View data by year
    2) View data by platform
    3) View yearly regional sales by genre
    4) View sales by publisher
    5) Quit

    Enter choice: 2

Enter platform: gen
```

```
                            Video Game Sales for gen
Name                          Year      Genre               Publisher                     Global Sales
streets of rage               1990      action              sega                          2,600,000.00
sonic the hedgehog            1991      platform            sega                          4,330,000.00
sonic the hedgehog 2          1992      platform            sega                          6,020,000.00
mortal kombat                 1992      fighting            arena entertainment           2,670,000.00
nba jam                       1992      sports              arena entertainment           2,050,000.00
street fighter ii': speci     1992      fighting            sega                          1,650,000.00
gunstar heroes                1992      shooter             sega                          130,000.00
ecco the dolphin              1992      adventure           sega                          120,000.00
shining force ii              1993      strategy            sega                          190,000.00
super street fighter ii       1993      fighting            capcom                        150,000.00
ecco: the tides of time       1993      adventure           sega                          70,000.00
street fighter ii': speci     1993      action              capcom                        70,000.00
streets of rage 3             1993      action              sega                          70,000.00
dynamite headdy               1993      platform            sega                          50,000.00
beyond oasis                  1993      role-playing        sega                          50,000.00
sonic & knuckles              1994      platform            sega                          1,820,000.00
sonic the hedgehog 3          1994      platform            sega                          1,760,000.00
disney's the lion king        1994      platform            virgin interactive            1,420,000.00
mortal kombat 3               1994      fighting            acclaim entertainment         1,340,000.00
nba jam tournament editio     1994      sports              acclaim entertainment         1,120,000.00
virtua racing                 1994      racing              sega                          260,000.00
lunar 2: eternal blue(sal     1994      role-playing        game arts                     140,000.00
yuu yuu hakusho: makyo to     1994      fighting            sega                          80,000.00
dragon slayer: the legend     1994      role-playing        sega                          80,000.00
j-league pro striker 2        1994      sports              sega                          40,000.00
castlevania bloodlines        1994      platform            konami digital entertainm     40,000.00
puzzle & action: tant-r       1994      misc                sega                          30,000.00

Total Sales                                                                               28,350,000.00

Do you want to plot (y/n)? y
```



```
Menu options

     1) View data by year
     2) View data by platform
     3) View yearly regional sales by genre
     4) View sales by publisher
     5) Quit
```

```
    Enter choice: 3

Enter year: 2016

Regional Video Games Sales per Genre
Genre          North America  Europe         Japan          Other          Global
shooter        16,240,000.00  15,900,000.00  1,060,000.00   5,020,000.00   38,220,000.00
action         9,290,000.00   10,680,000.00  7,070,000.00   3,070,000.00   30,110,000.00
sports         7,540,000.00   12,010,000.00  920,000.00     3,020,000.00   23,490,000.00
role-playing   5,890,000.00   4,280,000.00   6,610,000.00   1,400,000.00   18,180,000.00
fighting       1,840,000.00   1,340,000.00   750,000.00     540,000.00     4,470,000.00
adventure      950,000.00     1,320,000.00   1,180,000.00   370,000.00     3,820,000.00
platform       1,290,000.00   1,390,000.00   110,000.00     440,000.00     3,230,000.00
racing         730,000.00     1,770,000.00   10,000.00      280,000.00     2,790,000.00
misc           760,000.00     660,000.00     1,040,000.00   140,000.00     2,600,000.00
simulation     160,000.00     1,270,000.00   330,000.00     130,000.00     1,890,000.00
strategy       240,000.00     590,000.00     230,000.00     70,000.00      1,130,000.00
puzzle         0.00           10,000.00      0.00           0.00           10,000.00

Total Sales                                                                129,940,000.00

Do you want to plot (y/n)? y
```



```
Menu options

    1) View data by year
    2) View data by platform
    3) View yearly regional sales by genre
    4) View sales by publisher
    5) Quit

    Enter choice: 5

Thanks for using the program!
I'll leave you with this: "All your base are belong to us!"
```

Grading Rubrics

```
Computer Project #08                                   Scoring
Summary

General Requirements:
  __0__   (5 pts) Coding Standard 1-9
            (descriptive comments, function headers, etc...)

Implementation:
  (4 pts) open_file (No Mimir Test)
     -2 points No try/except
     -2 points No while loop

  (6 pts) read_file function test

  (5 pts) get_data_by_column function test

  (5 pts) get_genre_data function test

  (4 pts) get_publisher_data function test

  (4 pts) get_totals function test

  (4 pts) prepare_pie function test

  (3 pts) Pass Test1

  (5 pts) Pass Test2

  (7 pts) Pass Test3

  (3 pts) Pass Test4


Note: hard coding an answer earns zero points for the whole
project
-10 points for not using main()
```