

Problem Statement

The Federal Trade Commission (FTC) is a government agency that is responsible for "*protecting consumers and competition by preventing anticompetitive, deceptive, and unfair business practices through law enforcement, advocacy, and education without unduly burdening legitimate business activity.*"¹ It conducts investigative cases against companies that engage in unlawful practices that harm consumers in any way. These cases are logged in [FTC site](https://www.ftc.gov/about-ftc) and are available for public review.

You need to build a tool that can help analyze these FTC cases. To start with, Table 1 shows a sample of cases from the dataset. The data is in a tab-separated file named FTC-cases-TSV.txt. Important things to note in data:

1. Each case has a date, a title, a case type, and a case number. However, case type and case number may be missing for some cases.
2. The date is in yyyy-mm-dd format
3. Case type is given at the end of the Title within parentheses. The current data has Federal and Administrative as two case types
4. Case number is a string of some characters.

Table 1: FTC Case Data

Case date	Title (case type)	Case number
2021-07-01	Kuuuub, Inc., et al., U.S. v. (Recolor Oy) (Federal)	1823184
2021-06-22	Flo Health, Inc. (Administrative)	192 3133
2021-05-07	Everalbum, Inc., In the Matter of (Administrative)	192 3172
2021-05-03	Support King, LLC (SpyFone.com), In the Matter of (Administrative)	192 3003
2021-04-29	Vivint Smart Home, Inc. (Federal)	192 3060
2020-05-20	Tapplock, Inc., In the Matter of (Administrative)	192 3011
2020-04-28	Facebook, Inc., In the Matter of (Administrative)	092 3184; 182 3109; C-4365

The first version of our tool - which we will call as **CyberCop 1.0** - will be based on Character User Interface (CUI) and needs to do the following:

1. Search for cases reported against a company
2. Search for cases reported in a year
3. Search for a case number
4. Print case type summary
5. Print year-wise summary

Please refer to sample scenarios at the end of this document.

¹ <https://www.ftc.gov/about-ftc>

Solution Design

The solution design has four classes.

CyberCop

- `main()` method is the app's entry point
- `showMenu()` is to get user inputs
- `print...()` methods are to print the outputs as shown in the sample scenarios at the end of this document.

CCModel:

- `loadData()` reads data from `CyberCop.DATAFILE` and stores it in `fileData`
- `loadCases()` reads data from `fileData`, parses each row to create `Case` objects and stores them in `cases` array

SearchEngine:

- `searchTitle()`: takes `searchString` and `cases` array. Returns an array of `Cases` whose title contain the `searchString`. The search is case-insensitive
- `searchYear()`: takes year as a `String` and `cases` array. Returns an array of `Cases` that were data falls in the year
- `searchCaseNumner`: takes `caseNumber` and `cases` array and return an array of `Cases` that contain the `caseNumber` in their `caseNumber` property.

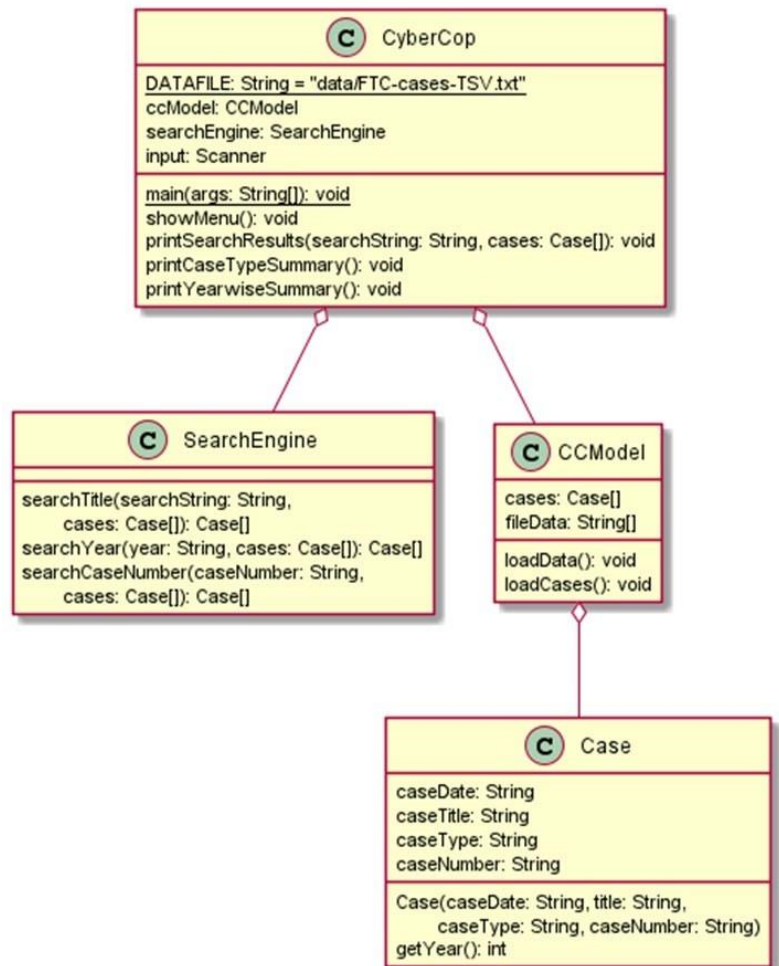
Case:

- The constructor takes all four parameters as `Strings` and initializes its instance variables
- The `getYear()` method is optional and it returns the year of the `caseDate`.

More specifics are given in code files as comments.

Design Constraint: Use of Collection classes (`ArrayLists`, `LinkedLists`, `Sets`, `Maps`, etc.) is not allowed in HW1

Instructions:



95712-Fall 2023 HW1

- Download the files from Canvas and store them in a project and a package as shown in Fig. 2.
- Complete your code.
- It is expected that you follow the design provided and do not add new classes, methods, or member variables. Making any design changes may impact test-cases and may also need rework for you in HW2/HW3.
- Write your name and Andrew id as comments at the top in all your Java files.
- You will test your program in two ways: Console output (refer sample outputs at the end of this document) and TestCyberCop.java. These two tests will get you 80% of the points. Other criteria applied to evaluate your program are:

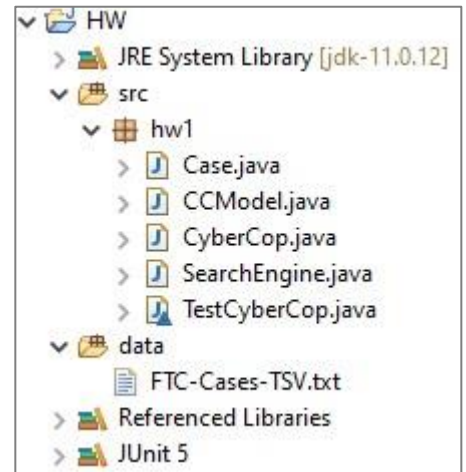


Figure 2: Folder structure

1. Documentation (5%): Your code should be well-commented, i.e., neither too many comments, nor too few. Yes, this requires a little bit of your judgment! Name your variables in a self-explanatory way. Write your name and Andrew id at the top in the comments in each class. Indent your code properly. (In Eclipse, press Ctrl-A to select all your code and then Ctrl-I to indent)
2. Code quality (5%): coding conventions, no unused variables/libraries, etc. Use your judgment to assess these criteria.
3. Code robustness (5%): Your program should not throw any errors while processing. You can safely assume that the user will not enter any garbage input.
4. Submission instructions (5%): Zip all your java files except test-file into AndrewId-hw1.zip. Do not submit any other folders, class files, test file, text files, and rest of your kitchen sink! Only last submission will be graded. Wrong files, incorrect package name, etc. may take away some points.

NO LATE SUBMISSIONS PLEASE! If you are unable to submit on time, you lose all the points. Please avoid last minute submission as Canvas may decide to quit on you! Learn to trust technology only to the extent you should! Do not take that risk! **No late submission will be accepted.**

Sample outputs**Scenario 1: Menu option 1 - A company has multiple cases**

```

*** Welcome to CyberCop! ***
1. Search cases for a company
2. Search cases in a year
3. Search case number
4. Print Case-type Summary
5. Print Year-wise Summary
6. Exit
1
-----
Enter search string
google
-----
3 case(s) found for google
-----
#. Last update Case Title                                     Case Type      Case/File Number
-----
1. 2019-09-04  Google LLC and YouTube, LLC                  Federal        172 3083
2. 2012-11-20  Google Inc.                                    Federal
3. 2011-10-24  Google, Inc., In the Matter of                            Administrative 102 3136
-----

```

Scenario 2: Menu option 1 - A company with no reported case

```

*** Welcome to CyberCop! ***
1. Search cases for a company
2. Search cases in a year
3. Search case number
4. Print Case-type Summary
5. Print Year-wise Summary
6. Exit
1
-----
Enter search string
apple
-----
Sorry, no search results found for apple
-----

```

Scenario 3: Menu option 2 - Several cases reported in a year

*** Welcome to CyberCop! ***

1. Search cases for a company
2. Search cases in a year
3. Search case number
4. Print Case-type Summary
5. Print Year-wise Summary
6. Exit

2

Enter search year as YYYY

2021

5 case(s) found for 2021

#. Last update	Case Title	Case Type	Case/File Number
1. 2021-07-01	Kuuuuub, Inc., et al., U.S. v. (Recolor Oy)	Federal	1823184
2. 2021-06-22	Flo Health, Inc.	Administrative	192 3133
3. 2021-05-07	Everalbum, Inc., In the Matter of	Administrative	192 3172
4. 2021-05-03	Support King, LLC (SpyFone.com), In the Matter of	Administrative	192 3003
5. 2021-04-29	Vivint Smart Home, Inc.	Federal	192 3060

Scenario 4: Menu option 2 - No cases in a year

```

*** Welcome to CyberCop! ***
1. Search cases for a company
2. Search cases in a year
3. Search case number
4. Print Case-type Summary
5. Print Year-wise Summary
6. Exit
2
-----
Enter search year as YYYY
-----
1994
Sorry, no search results found for 1994
-----

```

Scenario 5: Menu option 3 - Case number found

```

*** Welcome to CyberCop! ***
1. Search cases for a company
2. Search cases in a year
3. Search case number
4. Print Case-type Summary
5. Print Year-wise Summary
6. Exit
3
-----
Enter case number
-----
092 3184
1 case(s) found for 092 3184
-----
#.# Last update Case Title                                     Case Type      Case/File Number
-----
1. 2020-4-28   Facebook, Inc., In the Matter of      Administrative  092 3184; 182 3109; C-4365
-----

```

Scenario 6: Menu option 3 - Case number not found

```
*** Welcome to CyberCop! ***
1. Search cases for a company
2. Search cases in a year
3. Search case number
4. Print Case-type Summary
5. Print Year-wise Summary
6. Exit
3
-----
Enter case number
-----
12345
Sorry, no search results found for 12345
-----
```

Scenario 7: Menu option 4

```
*** Welcome to CyberCop! ***
1. Search cases for a company
2. Search cases in a year
3. Search case number
4. Print Case-type Summary
5. Print Year-wise Summary
6. Exit
4
-----
*** Case Type Summary Report ***
No. of Administrative cases: 161
No. of Federal cases: 115
No. of unknown case types: 6
-----
```

Scenario 8: Menu option 5

```
*** Welcome to CyberCop! ***
1. Search cases for a company
2. Search cases in a year
3. Search case number
4. Print Case-type Summary
5. Print Year-wise Summary
6. Exit
5
-----
*** Year-wise Summary Report ***
*** Number of FTC cases per year ***

2021: 5      2020: 25      2019: 20      2018: 17      2017: 9
2016: 9      2015: 21      2014: 30      2013: 17      2012: 12
2011: 16     2010: 16      2009: 11      2008: 12      2007: 5
2006: 7      2005: 8       2004: 10      2003: 7       2002: 8
2001: 4      2000: 7       1999: 3       1998: 1       1997: 2
-----
```