**[Houses](https://cs50.harvard.edu/x/2020/psets/7/houses/" \l "houses)**

Implement a program to import student data into a database, and then produce class rosters.

$ python import.py characters.csv

$ python roster.py Gryffindor

Lavender Brown, born 1979

Colin Creevey, born 1981

Seamus Finnigan, born 1979

Hermione Jean Granger, born 1979

Neville Longbottom, born 1980

Parvati Patil, born 1979

Harry James Potter, born 1980

Dean Thomas, born 1980

Romilda Vane, born 1981

Ginevra Molly Weasley, born 1981

Ronald Bilius Weasley, born 1980

[**Getting Started**](https://cs50.harvard.edu/x/2020/psets/7/houses/#getting-started)

Here’s how to download this problem into your own CS50 IDE. Log into [CS50 IDE](https://ide.cs50.io/) and then, in a terminal window, execute each of the below.

* Execute cd to ensure that you’re in ~/ (i.e., your home directory, aka ~).
* If you haven’t already, execute mkdir pset7 to make (i.e., create) a directory called pset7 in your home directory.
* Execute cd pset7 to change into (i.e., open) that directory.
* Execute wget https://cdn.cs50.net/2019/fall/psets/7/houses/houses.zip to download a (compressed) ZIP file with this problem’s distribution.
* Execute unzip houses.zip to uncompress that file.
* Execute rm houses.zip followed by yes or y to delete that ZIP file.
* Execute ls. You should see a directory called houses, which was inside of that ZIP file.
* Execute cd houses to change into that directory.
* Execute ls. You should see a characters.csv file and a students.db database.

[**Background**](https://cs50.harvard.edu/x/2020/psets/7/houses/#background)

Hogwarts is in need of a student database. For years, the professors have been maintaing a CSV file containing all of the students’ names and houses and years. But that file didn’t make it particularly easy to get access to certain data, such as a roster of all the Ravenclaw students, or an alphabetical listing of the students enrolled at the school.

The challenge ahead of you is to import all of the school’s data into a SQLite database, and write a Python program to query that database to get house rosters for each of the houses of Hogwarts.

[**Specification**](https://cs50.harvard.edu/x/2020/psets/7/houses/#specification)

In import.py, write a program that imports data from a CSV spreadsheet.

* Your program should accept the name of a CSV file as a command-line argument.
  + If the incorrect number of command-line arguments are provided, your program should print an error and exit.
  + You may assume that the CSV file will exist, and will have columns name, house, and birth.
* For each student in the CSV file, insert the student into the students table in the students.db database.
  + While the CSV file provided to you has just a name column, the database has separate columns for first, middle, and last names. You’ll thus want to first parse each name and separate it into first, middle, and last names. You may assume that each person’s name field will contain either two space-separated names (a first and last name) or three space-separated names (a first, middle, and last name). For students without a middle name, you should leave their middle name field as NULL in the table.

In roster.py, write a program that prints a list of students for a given house in alphabetical order.

* Your program should accept the name of a house as a command-line argument.
  + If the incorrect number of command-line arguments are provided, your program should print an error and exit.
* Your program should query the students table in the students.db database for all of the students in the specified house.
* Your program should then print out each student’s full name and birth year (formatted as, e.g., Harry James Potter, born 1980 or Luna Lovegood, born 1981).
  + Each student should be printed on their own line.
  + Students should be ordered by last name. For students with the same last name, they should be ordered by first name.

[**Walkthrough**](https://cs50.harvard.edu/x/2020/psets/7/houses/#walkthrough)

[**https://youtu.be/3w-EvTiw3p8**](https://youtu.be/3w-EvTiw3p8)

[**Usage**](https://cs50.harvard.edu/x/2020/psets/7/houses/#usage)

Your program should behave per the example below:

$ python import.py characters.csv

$ python roster.py Gryffindor

Hermione Jean Granger, born 1979

Harry James Potter, born 1980

Ginevra Molly Weasley, born 1981

Ronald Bilius Weasley, born 1980

...

[**Hints**](https://cs50.harvard.edu/x/2020/psets/7/houses/#hints)

* Recall that after you’ve imported SQL from cs50, you can set up a database connection using syntax like

db = SQL("sqlite:///students.db")

Then, you can use db.execute to execute SQL queries from inside of your Python script.

* Recall that when you call db.execute and perform a SELECT query, the return value will be a list of rows that are returned, where each row is represented by a Python dict.

[**Testing**](https://cs50.harvard.edu/x/2020/psets/7/houses/#testing)

No check50 for this problem, but be sure to test your code for each of the following.

$ python import.py characters.csv

$ python roster.py Gryffindor

Lavender Brown, born 1979

Colin Creevey, born 1981

Seamus Finnigan, born 1979

Hermione Jean Granger, born 1979

Neville Longbottom, born 1980

Parvati Patil, born 1979

Harry James Potter, born 1980

Dean Thomas, born 1980

Romilda Vane, born 1981

Ginevra Molly Weasley, born 1981

Ronald Bilius Weasley, born 1980

$ python roster.py Hufflepuff

Hannah Abbott, born 1980

Susan Bones, born 1979

Cedric Diggory, born 1977

Justin Finch-Fletchley, born 1979

Ernest Macmillan, born 1980

$ python roster.py Ravenclaw

Terry Boot, born 1980

Mandy Brocklehurst, born 1979

Cho Chang, born 1979

Penelope Clearwater, born 1976

Michael Corner, born 1979

Roger Davies, born 1978

Marietta Edgecombe, born 1978

Anthony Goldstein, born 1980

Robert Hilliard, born 1974

Luna Lovegood, born 1981

Isobel MacDougal, born 1980

Padma Patil, born 1979

Lisa Turpin, born 1979

$ python roster.py Slytherin

Millicent Bulstrode, born 1979

Vincent Crabbe, born 1979

Tracey Davis, born 1980

Marcus Flint, born 1975

Gregory Goyle, born 1980

Terence Higgs, born 1979

Draco Lucius Malfoy, born 1980

Adelaide Murton, born 1982

Pansy Parkinson, born 1979

Adrian Pucey, born 1977

Blaise Zabini, born 1979

[**How to Submit**](https://cs50.harvard.edu/x/2020/psets/7/houses/#how-to-submit)

Execute the below, logging in with your GitHub username and password when prompted. For security, you’ll see asterisks (\*) instead of the actual characters in your password.

submit50 cs50/problems/2020/x/houses