Python for Data Analysis and Visualization
Instructor: Claudia Carroll
Class 2: Dictionaries and JSON

Class 2 Homework Exercises

1. **Create a dictionary tracking the names of students in a class list and their majors, using the keys 'Name' and 'Major. Include at least 5 students. The write the code to print only the majors in your list, with no duplicates.**

```
students = {
    "Alice": {"name": "Alice", "major": "Computer Science"},
    "Bob": {"name": "Bob", "major": "Electrical Engineering"},
    "Charlie": {"name": "Charlie", "major": "Biology"},
    "David": {"name": "David", "major": "Physics"},
    "Eve": {"name": "Eve", "major": "Mathematics"}}

for student_info in students.values():
    print(student_info['major'])
```

2. **Using the code you learned in class one, on accessing data in files, and code for accessing dictionaries, write a program to count how many times each roof type is mentioned in the file 'SAFI_results.csv.' (Hint: All the commands you need are in the solution to Class 1 Exercise 1, and Class 2 Exercise 1)**

```
with open ("SAFI_results.csv") as f:
     f.readline()
     dict_roof_types = {}

     for line in f:
          roof_type = line.split(",")[18]
          if roof_type in dict_roof_types:
               dict_roof_types[roof_type] += 1
          else:
               dict_roof_types[roof_type] = 1

for item in dict_roof_types:
     print(item, "=", dict_roof_types[item])
```

3. **In your Jupyter Notebook for class 2, print the first dictionary contained within the SAFI.json file. Find the key '`D_curr_crop`' and write the code to print the value of this key.**

```
print(d[0]['D_plots'][0]['D_crops'][0]['D_curr_crop'])
```

4. **Write the code to print a list of the unique land measurement types (‘D03_unit_land’) in the SAFI.json file.**

```
unique_land_types = set()

for farms in d:
    if 'D_plots' in farms:
        plot = farms['D_plots']
        for info in plot:
            if 'D03_unit_land' in info:
                land_type = info['D03_unit_land']
                unique_land_types.add(land_type)

print(unique_land_types)
```