

Dictionaries in Python

Create a Python project with the following line of code to set up a dictionary of cities. The city name is the key to look up the value of the country where the city is found.

```
cities = {'London': 'England', 'Manchester': 'England', 'Paris': 'France',  
'Birmingham': 'England', 'Madrid': 'Spain'}
```

Now use the following code to list all city, country pairs:

```
for city in cities:  
    print(city, cities[city])
```

The methods below can be used with the existing directory:

- `cities.get(key)`, which returns the associated value.
- `cities.setdefault(key, value)`, which adds a new entry.
- `cities.pop(key)`, which removes the associated value.
- `cities.update({key: value})`, which allows a value to be changed.
- `cities.items()`, which lists the full contents of the dictionary.

Using these methods, write code to:

1. Add a new city, Lisbon, in Portugal. List all the city, country pairs to check this has worked.
2. Find the country where Paris is located.
3. Use the same method to find the country for a city, such as New York, not in the dictionary. What is returned?
4. Add a new city, Birmingham, in the USA. List all the city, country pairs. Has this worked? If not, why?
5. Now use a different method to replace Birmingham, England with Birmingham, USA.
6. Remove Manchester from the dictionary.

Extension: In task 4, there is no error message to say that the city entered already exists. Write code to check for this and return an appropriate message.