Practice Questions and Solutions for Chapter 5 – Dictionaries and Sets

Question 1: Dictionary Access and Update

Create a dictionary `student` with keys `"name"`, `"age"`, and `"subjects"` where `"subjects"` is a list of subject names. Update the age and add a new key `"grade"` with a value.

Solution:

```python
# Creating the dictionary
student = {
    "name": "Shivam",
    "age": 20,
    "subjects": ["Math", "Science", "English"]
}

# Updating the age
student["age"] = 21

# Adding a new key "grade"
student["grade"] = "A"

print(student)
# Output: {'name': 'Shivam', 'age': 21, 'subjects': ['Math', 'Science', 'English'], 'grade
```

Question 2: Using Dictionary Methods

Given a dictionary `contacts = {"John": "123-456-7890", "Jane": "987-654-3210"}`, add a new contact `"Bob"` with the phone number `"555-555-5555"` and print all keys in the dictionary.

Solution:

```
# Given dictionary
contacts = {"John": "123-456-7890", "Jane": "987-654-3210"}

# Adding a new contact
contacts["Bob"] = "555-555-5555"

# Printing all keys in the dictionary
print(contacts.keys())
# Output: dict_keys(['John', 'Jane', 'Bob'])
```

Question 3: Set Operations

Create a set `colors` with values `"red"`, `"blue"`, and `"green"`. Add a new color `"yellow"`, remove `"blue"`, and print the updated set.

Solution:

```
# Creating the set
colors = {"red", "blue", "green"}

# Adding a new color
colors.add("yellow")

# Removing the color "blue"
colors.remove("blue")

# Printing the updated set
print(colors)
# Output: {'red', 'green', 'yellow'}
```

Question 4: Combining Dictionaries

Given two dictionaries `dict1 = {"a": 1, "b": 2}` and `dict2 = {"b": 3, "c": 4}`, combine them into a new dictionary and print the result.

Solution:

```
# Given dictionaries
dict1 = {"a": 1, "b": 2}
dict2 = {"b": 3, "c": 4}

# Combining the dictionaries
combined_dict = {**dict1, **dict2}

print(combined_dict)
# Output: {'a': 1, 'b': 3, 'c': 4}
```

Question 5: Set Union and Intersection

Given two sets `set1 = {1, 2, 3}` and `set2 = {3, 4, 5}`, find the union and intersection of these sets and print the results.

Solution:

```
# Given sets
set1 = {1, 2, 3}
set2 = {3, 4, 5}

# Finding the union
union_set = set1.union(set2)

# Finding the intersection
intersection_set = set1.intersection(set2)

print("Union:", union_set)
# Output: Union: {1, 2, 3, 4, 5}

print("Intersection:", intersection_set)
# Output: Intersection: {3}
```