customer\_info = {

'customer\_id': 12345,

'first\_name': 'Alice',

'last\_name': 'Smith',

'email': 'alice@example.com'

}

a. Print the customer's first name.

b. Add a new key-value pair to the dictionary: 'phone' with the value '555-1234'.

c. Update the customer's email to 'alice.smith@example.com'.

d. Print the customer's last name.

\*\*Problem 2: Looping Through a Dictionary\*\*

You have a dictionary containing information about several customers:

```python

customers = {

1: {'name': 'John', 'age': 30},

2: {'name': 'Jane', 'age': 25},

3: {'name': 'Bob', 'age': 35}

}

a. Loop through the `customers` dictionary and print the name and age of each customer.

\*\*Problem 3: Dictionary of Lists\*\*

You have a dictionary of lists representing customer orders:

```python

customer\_orders = {

'customer1': ['product1', 'product2', 'product3'],

'customer2': ['product2', 'product4'],

'customer3': ['product1', 'product3', 'product5']

}

a. Print the list of products that 'customer2' has ordered.

b. Add a new order for 'customer1' with 'product4'.

c. Print the list of products that 'customer1' has ordered after the addition.

\*\*Problem 4: Sorting a Dictionary\*\*

You have a dictionary containing product prices:

```python

product\_prices = {

'product1': 10.99,

'product2': 5.49,

'product3': 8.75,

'product4': 12.99

}

a. Sort the products in ascending order of their prices.

b. Print the product with the highest price.

\*\*Problem 5: Nested Dictionary\*\*

You have a nested dictionary representing a student's grades:

```python

student\_grades = {

'math': {'exam1': 85, 'exam2': 92, 'final': 88},

'science': {'exam1': 78, 'exam2': 85, 'final': 80}

}

a. Print the student's math final grade.

b. Print the student's science exam2 grade.

\*\*Problem 6: More Dictionary Operations\*\*

You have a dictionary containing information about books:

```python

books = {

'book1': {'title': 'Python Basics', 'author': 'John Doe', 'year': 2020},

'book2': {'title': 'Data Science Handbook', 'author': 'Jane Smith', 'year': 2019}

}

a. Add a new book ('book3') with title 'Machine Learning' by 'Bob Johnson' published in 2021.

b. Print the title of 'book2'.

c. Print the author of 'book3'.

\*\*Problem 7: Dictionary Operations and Conditionals\*\*

You have a dictionary representing a customer's discounts:

```python

discounts = {

'standard': 5,

'volume': 10,

'loyalty': 15,

'brother-in-law': 30

}

customer = {

'discounts': ['loyalty', 'volume', 'standard'],

'qualifications': {

'loyalty': True,

'volume': True,

'standard': True,

'brother-in-law': False

}

}

a. Find the highest discount that the customer qualifies for and print it.

b. Calculate the discount percentage for the discount found in part (a).

c. If the customer qualifies for the 'brother-in-law' discount, print "You qualify for the brother-in-law discount," otherwise print "You do not qualify for the brother-in-law discount."