Sequences and Dictionaries worksheet
CS51 - Fall 2026
ANSWER KEY

Practice Problem 1 - Strings
You are given the string `message = 'I love cs51!'`. What will the following expressions evaluate to?

a. `message[1:4]` ⇒ `' lo'`

b. `message[:2]`⇒ `'I '`

c. `message[2:]`⇒ `'love cs51!'`

d. `message[:]`⇒ `'I love cs51!`

e. `message[2:11:2]`⇒ `'lv s1'`

f. `message[:11:2]`⇒ `'Ilv s1'`

g. `message[3::2]`⇒ `'oec5!'`

h. `message[-1]`⇒ `'!'`

i. `message[-1]='0'`⇒ `Type error: 'str' object does not support item assignment`

j. `message.upper()`⇒ `'I LOVE CS51!`

k. `message.isupper()`⇒ False

Practice Problem 2 - Lists

a. Define a list `favorite_numbers` with two elements, the numbers 24 and 47.
`favorite_numbers = [24, 47]`

b. Create an empty list. There are two ways you can achieve this.

```
empty_list = []
empty_list = list()
```

c. Convert the string `'cs51'` into a list of its individual characters.
`list('cs51')`

d. Consider the lists `list_1 = [1, 2]` and `list_2 = [3, 4]`. What will `list_1 + list_2` return?
`[1,2,3,4]`

e. Consider the list `list_1 = [1, 2]`. What will the contents of `list_2` be if `list_2 = list_1 * 3`?
`list_2=[1, 2, 1, 2, 1, 2]`

f. Consider the list `cheeses = ['Feta','Cheddar', 'Edam', 'Gouda']`. What will happen after the execution of each of the following lines?

```
cheeses.append('Haloumi')
cheeses.extend(['Emmental', 'Gruyere'])
cheeses.insert(1, 'Brie')

cheeses = ['Feta', 'Cheddar', 'Edam', 'Gouda', 'Haloumi']
cheeses = ['Feta', 'Cheddar', 'Edam', 'Gouda', 'Haloumi', 'Emmental', 'Gruyere']
cheeses = ['Feta', 'Brie', 'Cheddar', 'Edam', 'Gouda', 'Haloumi', 'Emmental', 'Gruyere']
```

g. Consider the list `cheeses = ['Feta','Cheddar', 'Edam', 'Gouda']`. What will happen after the execution of each of the following lines?

```
removed_cheese = cheeses.pop(1)
cheeses.remove('Cheddar')

removed_cheese = 'Cheddar'
cheeses = ['Feta', 'Edam', 'Gouda']
```

h. How can you break the string `motto = 'cs51 is my favorite class'` into a list of individual words?
`motto.split()`

i. How can you concatenate a list of strings into a single string? E.g., how can you turn the list `favorite_list = ['cs51', 'is', 'my', 'favorite', 'class']` into `'cs51 is my favorite class'`?

```
delimiter = ' '
favorite_string = delimiter.join(favorite_list)
```

Practice Problem 3 - Tuples

a. Define a tuple `tup` with the characters `'c','s','5', '1'`.

```
tup = ('c','s','5', '1')
#or tup = 'c','s','5', '1'
```

b. Create an empty tuple. There are two ways you can achieve this.

```
tup = ()
#or tup = tuple()
```

c. Convert the string `'cs51'` into a tuple of its individual characters.
`tuple('cs51')`

d. Consider the code `tuple('lup') + ('i', 'n')` . What will happen?
`('l', 'u', 'p', 'i', 'n')`

e. Consider the code `tuple('spam') * 2`. What will happen?
`('s', 'p', 'a', 'm', 's', 'p', 'a', 'm')`

f. Consider the code `tuple('cs51')`. What will happen if we execute `tuple[3]='0'`?
`TypeError: 'tuple' object does not support item assignment`

Practice Problem 4 - Ranges

a. What will the following code do?

```
for i in range(1,10,2):
    print(i)
```

Prints:

```
1
3
5
7
9
```

Practice Problem 5 - Dictionaries

a. Create an empty dictionary `d`. There are two ways you can achieve this

```
d = dict()
# or d = {}
```

b. Create an dictionary that associates English words with their translation to a language of your choice. Insert two such pairs of words. Print in pairs the keys and associated values.

```
english_spanish_dict = {}
english_spanish_dict['hello']='hola'
english_spanish_dict['goodbye']='adios'
for english, spanish in english_spanish_dict.items():
    print(english, spanish)
```