Dictionaries

No.	Title	Description	Completed	Play
1	Dictionary: Declaration and Initialisation	The dictionary data structure consists of key-value data pair.	✔	▶
2	Dictionary: Declaration	Dictionary consists of key-value data pair. The key must be of immutable type, like string and tuple.	✔	▶
3	Dictionary: Different ways of adding key-value pair.	Dictionary consists of key-value data pair. Python provides a few ways to add/update key-value pair.	✔	▶
4	Dictionary: Different ways of accessing key and/or value.	Dictionary consists of key-value data pair. Python provides a few ways to retrieve key and/or value.	✔	▶
5	mRNA transcription	In gene expression, mRNA is transcribed from a DNA template. The 4 nucleotide bases of A, T, C, G corresponds to the U, A, G, C bases of the mRNA. Write a function that returns the mRNA transcript given the sequence of a DNA strand.	✔	▶
6	Base composition	A DNA strand consisting of the 4 nucleotide bases is usually represented with a string of letters: A,T, C, G. Write a function that computes the base composition of a given DNA sequence.	✔	▶
7	Count Letters	Write a function countLetters(word) that takes in a word as argument and returns a dictionary that counts the number of times each letter appears.	✔	▶
8	Reverse Lookup	Write a function reverseLookup(dictionary, value) that takes in a dictionary and a value as arguments and returns a sorted list of all keys that contains the value. The function will return an empty list if no match is found.	✔	▶
9	Invert Dictionary	Write a function invertDictionary(d) that takes in a dictionary as argument and return a dictionary that inverts the keys and the values of the original dictionary.	✔	▶
10	Sparse Vector to Dictionary	A sparse vector is a vector whose entries are almost all zero, like [1, 0, 0, 0, 0, 0, 0, 2, 0]. Storing all those zeros wastes memory and dictionaries are commonly used to keep track of just the nonzero entries. For example, the vector shown earlier can be represented as {0:1, 7:2}, since the vector it is meant to represent has the value 1 at index 0 and the value 2 at index 7. Write a function that converts a sparse vector into a dictionary as described above.	✔	▶
11	Dictionary to Spare Vector	A sparse vector is a vector whose entries are almost all zero, like [1, 0, 0, 0, 0, 0, 0, 2, 0]. Storing all those zeros wastes memory and dictionaries are commonly used to keep track of just the nonzero entries. For example, the vector shown earlier can be represented as {0:1, 7:2}, since the vector it is meant to represent has the value 1 at index 0 and the value 2 at index 7. Write a function that converts a dictionary back to its sparse vector representation.	✔	▶