**Class 22**

**Key Ideas**

* Dictionaries are a mapping type of data structure
* Indexing into dictionaries is accomplished using keys, not integers
* Dictionaries are created using key-value pairs
* Pandas is a data manipulation library built on NumPy
* A Pandas Series is a one-dimensional array that can be labeled
* A Pandas DataFrame is a 2D array in which the rows and columns can be labeled
* Pandas Series and DataFrames can be indexed using labels or using implicit integer indices

**Built-ins**

**Functions**

**len**: number of key-value pairs in a dictionary

**list**: returns list of key names from a dictionary

**get**: retrieves a value from a dictionary

**pop**: deletes an item from a dictionary and returns its value

**popitem**: deletes the last key-value pair in a dictionary and returns them as a tuple

**clear**: deletes everything from a dictionary

**Series**: creates a Pandas series

**DataFrame**: creates a Pandas DataFrame

**Methods**

**keys**: returns the names of the keys in a dictionary

**values**: returns the values from a dictionary or from a Pandas Series or DataFrame

**items**: returns the key-value pairs from a dictionary

**index**: returns the indices of a Pandas Series or DataFrame

**columns**: returns the indices, which are column labels, of a DataFrame

**iloc**: uses implicit indices to index into a row of a DataFrame

**loc**: uses labels to index into a row of a DataFrame

**drop**: deletes column(s) from a DataFrame

**head**: displays the first 5 rows of a DataFrame

**tail**: displays the last 5 rows of a DataFrame

**Operators**

{ } surround dictionary definition

**Assessment Questions**

(T/**F**): Dictionaries can be indexed using implicit integer indices

(**T**/F): Rows in Pandas DataFrames can be indexed using labels or implicit integer indices