

Creating and Accessing Pandas DataFrames	
<b>Course Code:</b> CPE 031	<b>Program:</b> Computer Engineering
<b>Course Title:</b> Visualization and Data Analysis	<b>Date Performed:</b> October 15, 2024
<b>Section:</b> CPE21S4	<b>Date Submitted:</b> October 15, 2024
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<b>Intended Learning Outcomes (ILO):</b>  By the end of this laboratory session, learners will be able to <ul style="list-style-type: none"> <li>- Construct and manipulate Pandas DataFrames from various data structures (such as lists, dictionaries, and NumPy arrays) while demonstrating an understanding of DataFrame attributes and methods. This includes loading the dataset, creating DataFrames with appropriate column labels and accessing data from rows and columns.</li> </ul>	
<b>Instructions:</b>  <ol style="list-style-type: none"> <li>1. <b>Loading your dataset:</b> Refer back to your chosen dataset from the PRELIM period. Whether you downloaded it or stored it in your Google Drive, you are required to load it into the <a href="#">Google Colab</a>. Watch this <a href="#">video</a> to learn more about how to read CSV files in Google Colab. <b>(Take a screenshot to document successful execution.)</b></li> <li>2. <b>Creating a dataframe from your CSV file:</b> Once you have successfully loaded your dataset, you need to create a dataframe from your uploaded CSV file. <b>(Take a screenshot to document successful execution.)</b></li> <li>3. <b>Creating a dataframe from a dictionary of lists:</b> Manually create a dictionary where each value is composed of a list from your original dataset, then load it into a dataframe, before printing it. You are required to provide at least five (5) observations in your list. <b>(Take a screenshot to document successful execution.)</b></li> <li>4. <b>Creating a dataframe from a list of dictionaries:</b> Manually create a list of dictionaries from your original dataset, then pass it into a dataframe, before printing it. You are required to provide at least five (5) observations in your list. <b>(Take a screenshot to document successful execution.)</b></li> <li>5. <b>Selecting dataframe columns:</b> Execute a method that would allow you to select a single and multiple dataframe columns. <b>(Take a screenshot to document successful execution.)</b></li> <li>6. <b>Selecting dataframe rows:</b> Execute a method that would allow you to select a single and multiple dataframe rows using panda indexing and python indexing.</li> </ol>	

Output:

1. Loading your dataset

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#Loading your dataset

```
from google.colab import files
uploaded = files.upload()
import pandas as pd
```

Choose Files

valorant-stats.csv

- valorant-stats.csv(text/csv) - 1138 bytes, last modified: 10/15/2024 - 100% done

Saving valorant-stats.csv to valorant-stats.csv

2. Creating a dataframe from your CSV file

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#Creating a dataframe from your CSV file

```
data = pd.read_csv('valorant-stats.csv')
df = pd.DataFrame(data)

df
```

	Name	Weapon Type	Price	Fire Rate	Wall Penetration	Magazine Capacity	HDWG_0	BDWG_0	LDWG_0	HDWG_1	BDWG_1	LDWG_1	HDWG_2	BDWG_2	LDWG_2
0	Classic	Sidearm	0	6.75	Low	12	78	26	22	78	26	22	66	22	18
1	Shorty	Sidearm	200	3.30	Low	2	36	12	10	24	8	6	9	3	2
2	Frenzy	Sidearm	400	10.00	Low	13	78	26	22	63	21	17	63	21	17
3	Ghost	Sidearm	500	6.75	Medium	15	105	33	26	88	25	21	88	25	21
4	Sheriff	Sidearm	800	4.00	High	6	160	55	47	160	55	47	145	50	43
5	Stinger	SMG	1000	18.00	Low	20	67	27	23	62	25	21	62	25	21
6	Spectre	SMG	1600	13.33	Medium	30	78	26	22	66	22	18	66	22	18
7	Bulldog	Rifle	2100	9.15	Medium	24	116	35	30	116	35	30	116	35	30
8	Guardian	Rifle	2500	6.50	Medium	12	195	65	49	195	65	49	195	65	49
9	Phantom	Rifle	2900	11.00	Medium	30	156	39	33	140	35	30	124	31	26
10	Vandal	Rifle	2900	9.25	Medium	25	156	39	33	156	39	33	156	39	33
11	Marshall	Sniper	1100	1.50	Medium	5	202	101	85	202	101	85	202	101	85
12	Operator	Sniper	4500	0.75	High	5	255	150	127	255	150	127	255	150	127
13	Bucky	Shotgun	900	1.10	Low	5	55	22	19	34	17	14	18	9	8
14	Judge	Shotgun	1500	3.50	Medium	7	34	17	14	26	13	11	20	10	9
15	Ares	Heavy	1600	10.00	High	50	72	30	25	72	30	25	67	28	23
16	Odin	Heavy	3200	12.00	High	100	95	38	32	95	38	32	77	31	26

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### 3. Creating a dataframe from a dictionary of lists

```
#Creating a dataframe from a dictionary of lists

dict1 = {
    'Gun Name': df['Name'], 'Type of Weapon': df['Weapon Type'],
    'Price': df['Price'], 'Fire Rate': df['Fire Rate'],
    'Wall Penetration': df['Wall Penetration'], 'Magazine Capacity': df['Magazine Capacity']
}

df1 = pd.DataFrame(dict1)

df1.head(5)

#Classic: Free, balanced fire rate (6.75), good magazine (12), low penetration. Great starter weapon.
#Shorty: Costs 200, low fire rate (3.30), only 2 shots, effective in close-range combat.
#Frenzy: Priced at 400, highest fire rate (10.00), decent magazine (13), low penetration. Good for quick engagements.
#Ghost: Costs 500, moderate fire rate (6.75), medium penetration (15 rounds), versatile option for mid-range.
#Sheriff: Expensive (800), low fire rate (4.00), high penetration, but only 6 shots. Best for powerful, precision shots.
```

	Gun Name	Type of Weapon	Price	Fire Rate	Wall Penetration	Magazine Capacity
0	Classic	Sidearm	0	6.75	Low	12
1	Shorty	Sidearm	200	3.30	Low	2
2	Frenzy	Sidearm	400	10.00	Low	13
3	Ghost	Sidearm	500	6.75	Medium	15
4	Sheriff	Sidearm	800	4.00	High	6

### 4. Creating a dataframe from a list of dictionaries

```
#Creating a dataframe from a list of dictionaries

list1 = [
    {'Gun Name': 'Classic', 'Type of Weapon': 'Sidearm', 'Price': 0, 'Fire Rate': 6.75, 'Wall Penetration': 'Low', 'Magazine Capacity': 12},
    {'Gun Name': 'Shorty', 'Type of Weapon': 'Sidearm', 'Price': 200, 'Fire Rate': 3.30, 'Wall Penetration': 'Low', 'Magazine Capacity': 2},
    {'Gun Name': 'Frenzy', 'Type of Weapon': 'Sidearm', 'Price': 400, 'Fire Rate': 10.00, 'Wall Penetration': 'Low', 'Magazine Capacity': 13},
    {'Gun Name': 'Ghost', 'Type of Weapon': 'Sidearm', 'Price': 500, 'Fire Rate': 6.75, 'Wall Penetration': 'Medium', 'Magazine Capacity': 15},
    {'Gun Name': 'Sheriff', 'Type of Weapon': 'Sidearm', 'Price': 800, 'Fire Rate': 4.00, 'Wall Penetration': 'High', 'Magazine Capacity': 6}
]

df2 = pd.DataFrame(list1)

df2

#Classic: Free, balanced fire rate (6.75), good magazine (12), low penetration. Great starter weapon.
#Shorty: Costs 200, low fire rate (3.30), only 2 shots, effective in close-range combat.
#Frenzy: Priced at 400, highest fire rate (10.00), decent magazine (13), low penetration. Good for quick engagements.
#Ghost: Costs 500, moderate fire rate (6.75), medium penetration (15 rounds), versatile option for mid-range.
#Sheriff: Expensive (800), low fire rate (4.00), high penetration, but only 6 shots. Best for powerful, precision shots.
```

	Gun Name	Type of Weapon	Price	Fire Rate	Wall Penetration	Magazine Capacity
0	Classic	Sidearm	0	6.75	Low	12
1	Shorty	Sidearm	200	3.30	Low	2
2	Frenzy	Sidearm	400	10.00	Low	13
3	Ghost	Sidearm	500	6.75	Medium	15
4	Sheriff	Sidearm	800	4.00	High	6

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## 5. Selecting dataframe columns

```
#Selecting dataframe columns  
|  
# Selecting a single column  
single_column = df2['Gun Name']  
print(single_column)
```

```
0    Classic  
1    Shorty  
2    Frenzy  
3    Ghost  
4    Sheriff  
Name: Gun Name, dtype: object
```

```
✓ 0s # Selecting multiple columns  
multiple_columns = df2[['Gun Name', 'Price']]  
print(multiple_columns)
```

```
0s  
Gun Name Price  
0    Classic    0  
1    Shorty   200  
2    Frenzy   400  
3    Ghost   500  
4    Sheriff   800
```

## 6. Selecting dataframe rows

```
#Selecting dataframe rows

# Selecting a single row by label, using panda indexing
single_row = df2.loc[0]
single_row
```

0

Gun Name	Classic
Type of Weapon	Sidearm
Price	0
Fire Rate	6.75
Wall Penetration	Low
Magazine Capacity	12

dtype: object

```
#Selecting dataframe rows

# Selecting a single row by label, using python indexing
single_row = df2[0:1]
single_row
```

0

Gun Name	Type of Weapon	Price	Fire Rate	Wall Penetration	Magazine Capacity
Classic	Sidearm	0	6.75	Low	12

0s



```
# Selecting multiple rows by label

# Selecting a single row by label, using panda indexing
multiple_rows = df2.loc[[0, 3]]
multiple_rows
```



	Gun Name	Type of Weapon	Price	Fire Rate	Wall Penetration	Magazine Capacity
0	Classic	Sidearm	0	6.75	Low	12
3	Ghost	Sidearm	500	6.75	Medium	15



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```
[99] # Selecting multiple rows by label

# Selecting a single row by label, using python indexing
multiple_rows = df2[0:2]
multiple_rows
```



	Gun Name	Type of Weapon	Price	Fire Rate	Wall Penetration	Magazine Capacity
0	Classic	Sidearm	0	6.75	Low	12
1	Shorty	Sidearm	200	3.30	Low	2



Next steps:

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