DA Capstone (AutoScout) Intro_new_DE

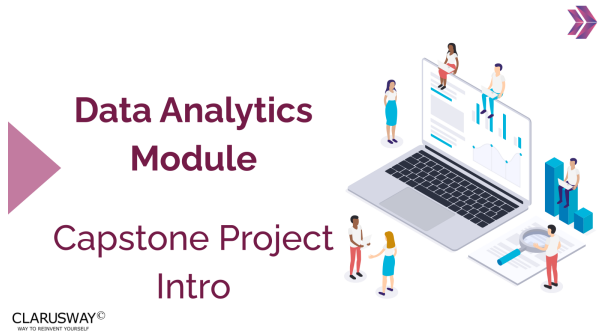
Pear Deck Session
Training Clarusway
Pear Deck - March 10, 2023 at 10:47AM

Part 1 - Summary

Use this space to summarize your thoughts on the lesson

Part 2 - Responses

Slide 1



Use this space to take notes:

Slide 2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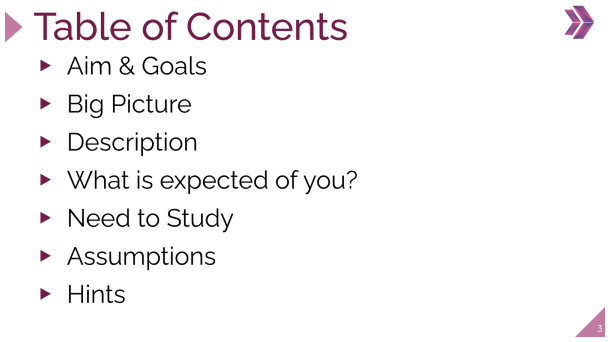
Slide 3


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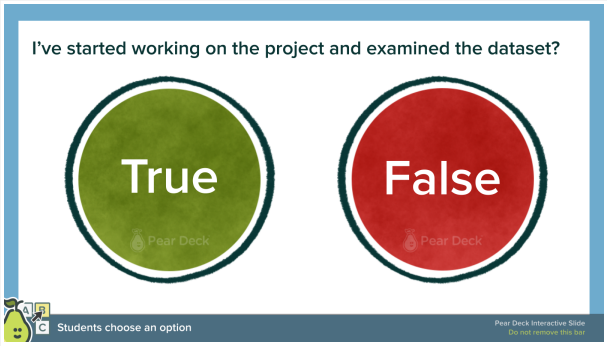
Slide 4	Your Response
	You Chose

Slide 4	Your Response
	• **False** Other Choices • True

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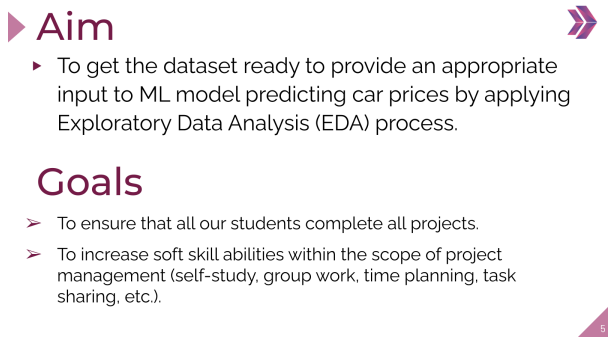
Slide 5


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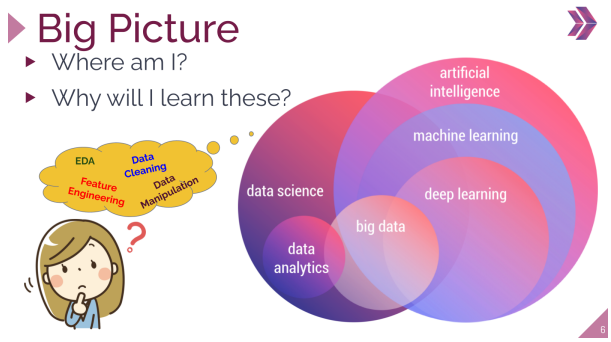
Slide 6



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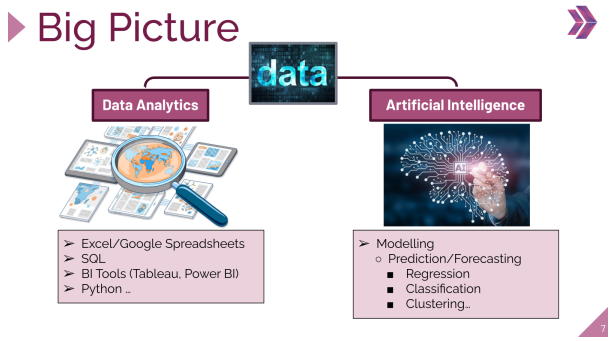
Slide 7



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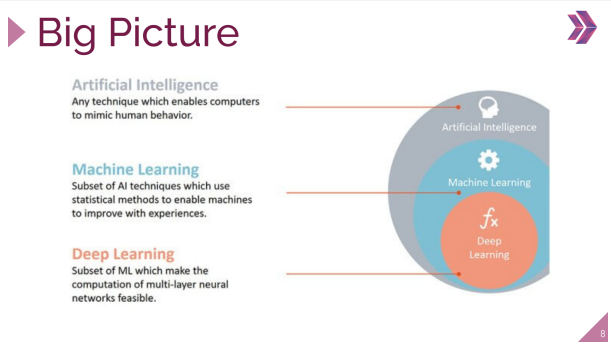
Slide 8



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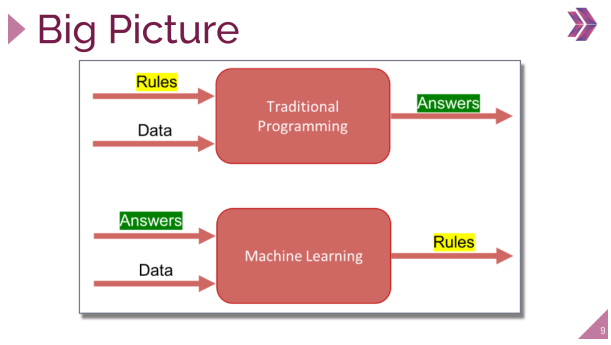
Slide 9



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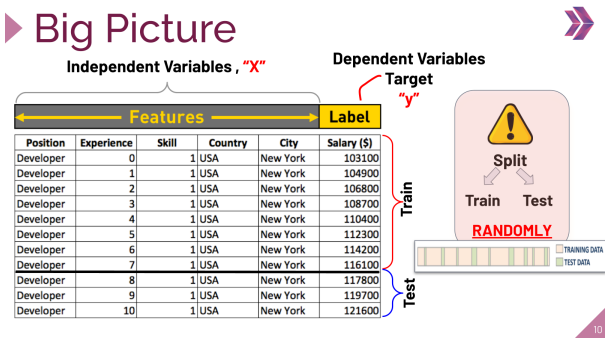

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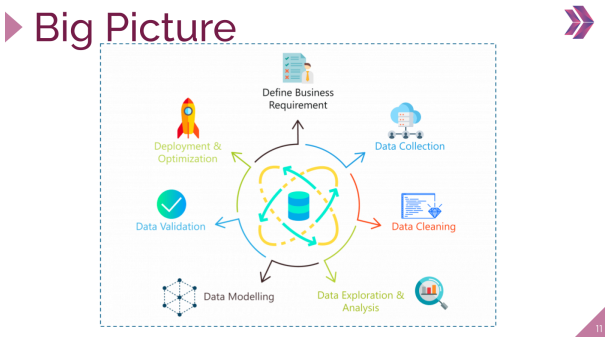
Slide 11



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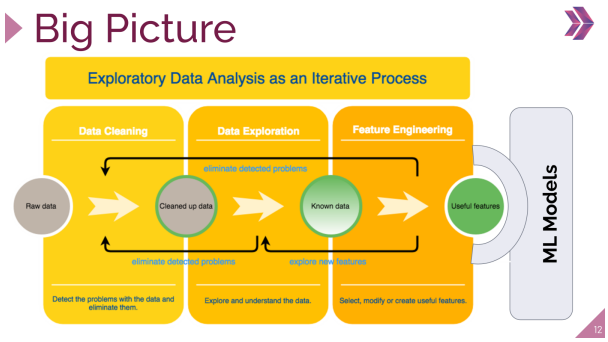

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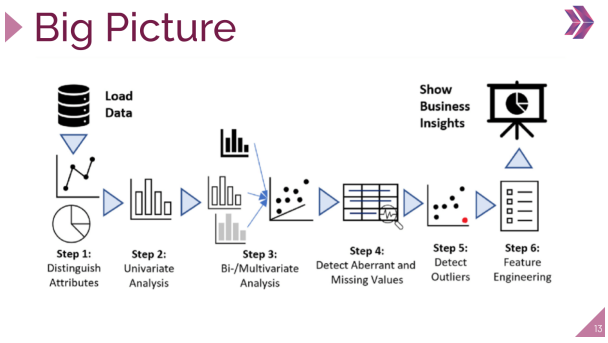
Slide 13



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Slide 14

Description

- A ``.json`` file containing a dataset consisting of **29480 rows and 58 columns** is provided.
- This dataset, scraped from the online car trading company in 2022, contains many features of **various number of car models**.
- The features (variables) of this dataset are **too messy and distorted**.

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Use this space to take notes:

Slide 15

What is expected of you?

- Read the "**.json**" file and assign the dataset into a "**DataFrame**" using "pandas".
- Implement all aspects of the "**EDA process**" to the dataset.
  - Fix corrupted **data formats**
  - Handle with **missing values and outliers**
    - **Domain knowledge** (automobiles) is important
    - Always use the **internet** to do the research that you need (Domain Knowledge)
    - Think carefully to decide whether a data is **outliers or not**
  - **Drop the columns/rows** you determined unnecessary as a result of your analysis
  - Use **visualization tools** while doing all these processes

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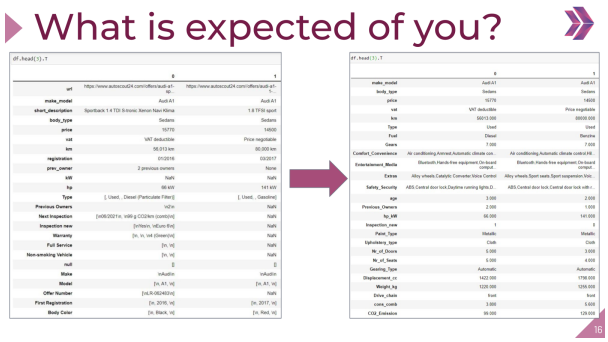
Use this space to take notes:

Slide 16



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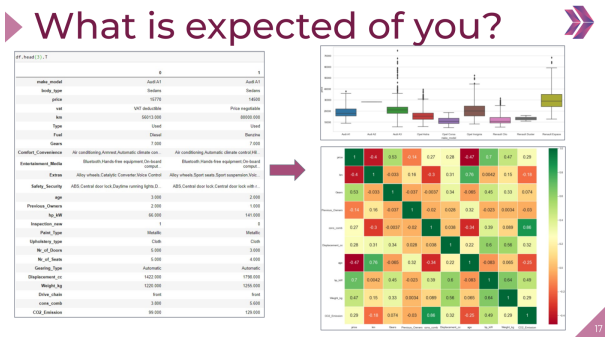
Slide 17



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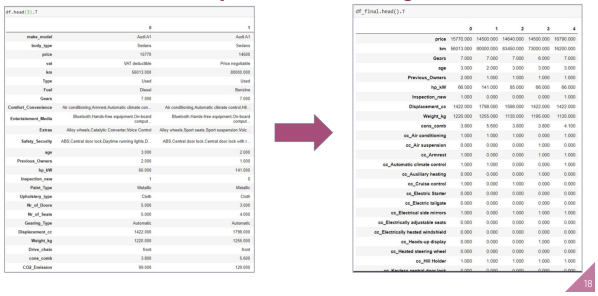
Slide 18

What is expected of you?



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Use this space to take notes:

Slide 19

Need to Study

- str.method
- contains()
- extract()
- get_dummies()
- add_prefix()
- sample()
- to_numeric()
- isin()
- apply()
- replace()
- split()
- join()
- regex
- def
- lambda

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Use this space to take notes:

Slide 20

Assumptions

- Assume the year you are currently in is 2022

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Use this space to take notes:

Slide 21

Hints

- Domain Knowledge is one of the most important things to evaluate your data.
- You have to evaluate each column by target label.

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Use this space to take notes:

Slide 22

Hints

- Check the column names.
  (You can change the column names to something more useful.)
- Check the percentage of null values for each column.
  (You can drop columns having more than %... null value.)
- Check the value_counts of each column, evaluate them and take notes about what you'll do.
  (drop, similarity between columns, how to clean, define the pattern etc.)

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Use this space to take notes:

Slide 23

Hints

- How to exclude each value of columns from list.

```
\n1\n                                                                                                  8101
NaN                                                                                                    6640
\n2\n                                                                                                   766
\n0\n                                                                                                   163
\n3\n                                                                                                    17
                                                                                                       ...
[\n1\n, \n96 g CO2/km (comb)\n]                                                                          1
[\n1\n, \n181 g CO2/km (comb)\n]                                                                         1
[\n1\n, \n, 6 l/100 km (comb), \n, 8 l/100 km (city), \n, 4.9 l/100 km (country), \n]                    1
[\n1\n, \n, 6.7 l/100 km (comb), \n, 8.6 l/100 km (city), \n, 5.6 l/100 km (country), \n]               1
[\n1\n, \n102 g CO2/km (comb)\n]                                                                         1
Name: Previous Owners, Length: 103, dtype: int64
```

```
df["Previous_Owners"] = [item[0] if type(item) == list else item for item in df["Previous Owners"]]
df["Previous_Owners"]
```

```
...
```

```
df["Previous_Owners2"] = df["Previous Owners"].apply(lambda item: item[0] if type(item) == list else item)
df["Previous_Owners2"]
```

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Use this space to take notes:

Slide 24

Hints

- You can create functions to clean values

```
df["Fuel"].value_counts(dropna=False)
```

```
Diesel (Particulate Filter)          4315
Super 95                             4100
Gasoline                             3175
Diesel                               2984
Regular                               503
Super E10 95                          402
Super 95 (Particulate Filter)         268
```

```
benzine = ["Gasoline", "Super 95","Regular","Super E10 95","Super Plus 98","Super Plus E10 98", "Others"]
lpg = ["LPG","Liquid petroleum gas", "CNG", "Biogas", "Domestic gas H"]
def fueltype(x):
    if x in benzine:
        return "Benzine"
    elif x in lpg:
        return "LPG/CNG"
    else:
        return x
df["Fuel"] = df.Fuel.apply(fueltype)
```

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Use this space to take notes:

Slide 25

Hints

- Relatively hard-to-handle columns
  - Consumption

    To create separate columns, define the patterns for each consumption type. Then evaluate which one is enough to ML Model.

```
NaN                                                                                1906
[[3.9 l/100 km (comb)], [4.1 l/100 km (city)], [3.7 l/100 km (country)]]            304
[[4.2 l/100 km (comb)], [5 l/100 km (city)], [3.7 l/100 km (country)]]              276
[[5.4 l/100 km (comb)], [6.8 l/100 km (city)], [4.5 l/100 km (country)]]            257
[[3.8 l/100 km (comb)], [4.3 l/100 km (city)], [3.5 l/100 km (country)]]            253
                                                                                   ...
[[3.6 l/100 km (comb)], [], [4.4 l/100 km (country)]]                                1
[\n, 4.8 l/100 km (comb), \n, 5.6 l/100 km (city), \n, 4.3 l/100 km (country), \n]   1
[[7.6 l/100 km (comb)], [], []]                                                      1
[[5.6 l/100 km (comb)], [7.6 l/100 km (city)], [4.4 l/100 km (country)]]             1
[\n, 4.7 l/100 km (comb), \n, \n, \n]                                                1
Name: Consumption, Length: 882, dtype: int64
```

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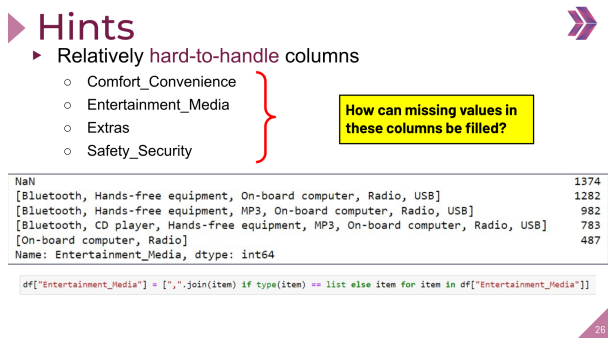
Use this space to take notes:

Slide 26



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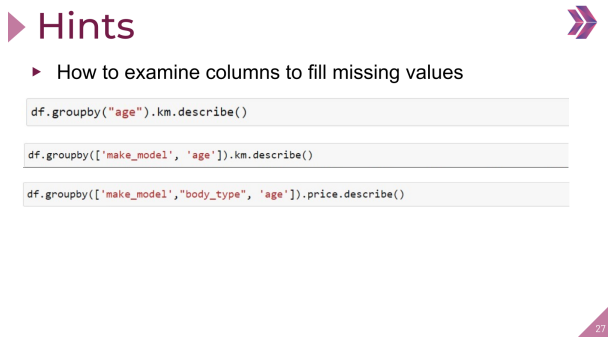
Slide 27



Use this space to take notes:

Slide 28

Hints

- How to fill missing values by groups

Example-1

```
#Step-1
#df["body_type"].fillna(df["body_type"].mode()[0])

#Step-2
#df.loc[df["make_model"]=="Audi A1", "body_type"].fillna(df[df["make_model"]=="Audi A1"]["body_type"].mode()[0])

#Step-3
for group in list(df["make_model"].unique()):
    cond = df["make_model"]==group
    mode = list(df[cond]["body_type"].mode())
    if mode != []:
        df.loc[cond, "body_type"] = df.loc[cond, "body_type"].fillna(df[cond]["body_type"].mode()[0])
    else:
        df.loc[cond, "body_type"] = df.loc[cond, "body_type"].fillna(df["body_type"].mode()[0])
```

You can generalize this loop to create your own function in your analysis

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Use this space to take notes:

Slide 29

Hints

- How to fill missing values by groups

Example-2

```
#Step-1
#df.["Previous_Owners"].fillna(method="ffill")

#Step-2
#df.loc[df["age"]==0, "Previous_Owners"].fillna(method="ffill")

#Step-3
for group in list(df["age"].unique()):
    cond = df["age"]==group
    df.loc[cond, "Previous_Owners"] = df.loc[cond, "Previous_Owners"].fillna(method="ffill").fillna(method="bfill")
df["Previous_Owners"] = df["Previous_Owners"].fillna(method="ffill").fillna(method="bfill")
```

You can generalize this loop to create your own function

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Use this space to take notes:

Slide 30

Hints

- How to fill missing values by groups

Example-3

```
# Step-1

# df.["Paint_Type"].fillna(method="ffill")

# Step-2
# df.loc[df["make_model"]=="Audi A1", "Paint_Type"].fillna(method="ffill")

# Step-3
# for group in list(df["make_model"].unique()):
#     cond = df["make_model"]==group
#     df.loc[cond, "Paint_Type"] = df.loc[cond, "Paint_Type"].fillna(method="ffill").fillna(method="bfill")
# df["Paint_Type"] = df["Paint_Type"].fillna(method="ffill").fillna(method="bfill")

# Step-4

for group1 in df["make_model"].unique():
    for group2 in list(df["body_type"].unique()):
        cond2 = (df["make_model"]==group1) & (df["body_type"]==group2)
        df.loc[cond2, "Paint_Type"] = df.loc[cond2, "Paint_Type"].fillna(method="ffill").fillna(method="bfill")

for group1 in list(df["make_model"].unique()):
    cond1 = df["make_model"]==group1
    df.loc[cond1, "Paint_Type"] = df.loc[cond1, "Paint_Type"].fillna(method="ffill").fillna(method="bfill")

df["Paint_Type"] = df["Paint_Type"].fillna(method="ffill").fillna(method="bfill")
```

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Use this space to take notes:

Slide 31

Hints

- Dummy Operation

(The get_dummies function has 2 different uses)

pd.get_dummies(df)

need to be research

df["col_name"].str.get_dummies(sep = " , ")

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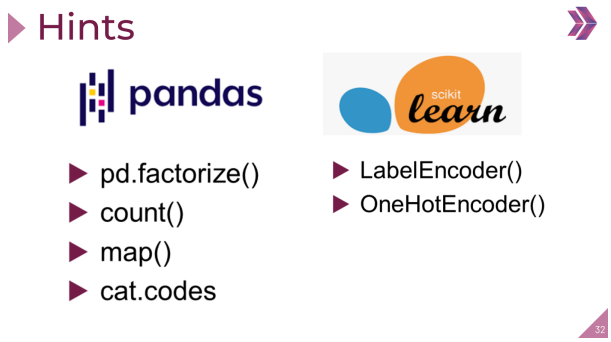
Use this space to take notes:

Slide 32



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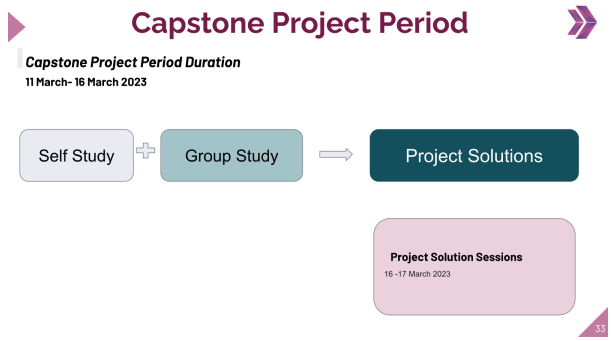
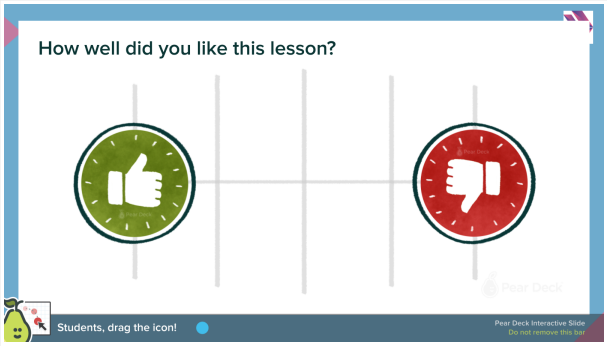
Slide 33



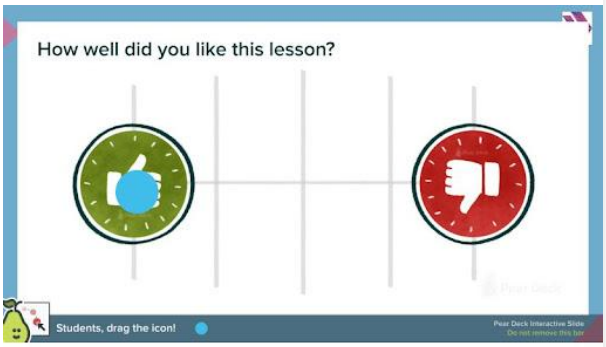
Use this space to take notes:

Slide 34	Your Response

Slide 34



Your Response



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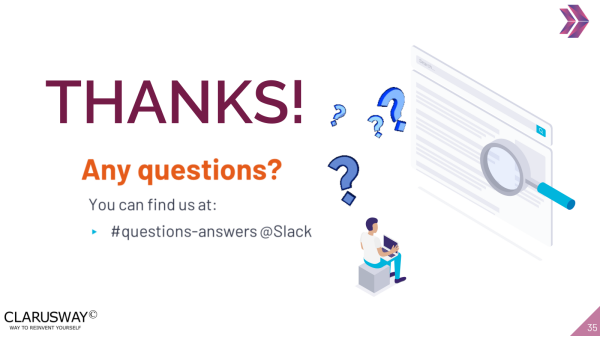

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