```
import numpy as np
import pandas as pd

#Exercise 1:

#Creating numpy array containing the numbers from 1 to 10.
array1 = np.arange(1, 11)

print('array containing numbers from 1 to 10 :=> \n',array1)

#Reshaping array into 2x5 matrix.
reshaped_array = array1.reshape(2, 5)

print("\n Reshaped array :=> \n", reshaped_array)
```

```
array containing numbers from 1 to 10 :=>
 [ 1  2  3  4  5  6  7  8  9 10]

 Reshaped array :=>
 [[ 1  2  3  4  5]
 [ 6  7  8  9 10]]
```

```
[11] #Exercise 2:

#Array containing the numbers from 1 to 20.
array2 = np.arange(1, 21)
print('Array containing numbers from 1 to 20 :=> \n', array2)

#Extracting elements between 5th and 15th index.
extracted_elements = array2[5: 15]
print('\n Elements between 5th and 15th index :=> \n', extracted_elements)
```

```
Array containing numbers from 1 to 20 :=>
 [ 1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20]

 Elements between 5th and 15th index :=>
 [ 6  7  8  9 10 11 12 13 14 15]
```

[11]

```
Array containing numbers from 1 to 20 :=>
 [ 1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20]

 Elements between 5th and 15th index :=>
 [ 6  7  8  9 10 11 12 13 14 15]
```

```
#Exercise 3:

#Pandas series with the following data: {'apples': 3, 'bananas': 2, 'oranges': 1}
data = {'apples':3, 'bananas': 2, 'oranges': 1}
pd_series = pd.Series(data)
print('Pandas Series with following data: \n', pd_series)

#Adding new item to the series with key 'pears' and value 4.
pd_series['pears'] = 4

#Output after adding new item.
print('\n Output after adding a new item: \n', pd_series )
```

```
Pandas Series with following data:
 apples     3
bananas    2
oranges    1
dtype: int64

 Output after adding a new item:
 apples     3
bananas    2
oranges    1
pears      4
dtype: int64
```

[17]

```
#Exercise 4:

#Creating DataFrame with following columns: name, age and gender.
data = [ {'name': 'Alice', 'age': 25, 'gender': 'Female'},
         {'name': 'Bob', 'age': 30, 'gender': 'Male'},
         {'name': 'Charlie', 'age': 35, 'gender': 'Male'},
         {'name': 'David', 'age': 22, 'gender': 'Male'},
```

```
pears     4
dtype: int64
```

[17]
```
#Exercise 4:

#Creating DataFrame with following columns: name, age and gender.
data = [ {'name': 'Alice', 'age': 25, 'gender': 'Female'},
         {'name': 'Bob', 'age': 30, 'gender': 'Male'},
         {'name': 'Charlie', 'age': 35, 'gender': 'Male'},
         {'name': 'David', 'age': 22, 'gender': 'Male'},
         {'name': 'Emma', 'age': 28, 'gender': 'Female'},
         {'name': 'Fiona', 'age': 31, 'gender': 'Female'},
         {'name': 'George', 'age': 27, 'gender': 'Male'},
         {'name': 'Hannah', 'age': 24, 'gender': 'Female'},
         {'name': 'Ian', 'age': 33, 'gender': 'Male'},
         {'name': 'Julia', 'age': 29, 'gender': 'Female'} ]

df = pd.DataFrame(data)

print(df)
```

```
      name  age  gender
0    Alice   25  Female
1      Bob   30    Male
2  Charlie   35    Male
3    David   22    Male
4     Emma   28  Female
5    Fiona   31  Female
6   George   27    Male
7   Hannah   24  Female
8      Ian   33    Male
9    Julia   29  Female
```

[18]
```
#Exercise 5:

#Adding new column to the dataframe named occupation.
occupations = ['Programmer', 'Manager', 'Analyst', 'Programmer', 'Manager', 'Analyst',
               'Programmer', 'Manager', 'Analyst', 'Programmer']
```

```
9    Julia   29  Female
```

[18]
```
#Exercise 5:

#Adding new column to the dataframe named occupation.
occupations = ['Programmer', 'Manager', 'Analyst', 'Programmer', 'Manager', 'Analyst',
               'Programmer', 'Manager', 'Analyst', 'Programmer']

df['occupation'] = occupations

print('After adding occupation to the DataFrame : \n', df)
```

```
After adding occupation to the DataFrame :
      name  age  gender  occupation
0    Alice   25  Female  Programmer
1      Bob   30    Male     Manager
2  Charlie   35    Male     Analyst
3    David   22    Male  Programmer
4     Emma   28  Female     Manager
5    Fiona   31  Female     Analyst
6   George   27    Male  Programmer
7   Hannah   24  Female     Manager
8      Ian   33    Male     Analyst
9    Julia   29  Female  Programmer
```

[19]
```
#Exercise 6:

#Rows of the DataFrame where age is greater than or equal to 30.
df_age_filtered = df[df['age'] >= 30]

print("DataFrame where age is greater than or equal to 30:\n", df_age_filtered)
```

```
DataFrame where age is greater than or equal to 30:
      name  age  gender occupation
1      Bob   30    Male    Manager
2  Charlie   35    Male    Analyst
5    Fiona   31  Female    Analyst
8      Ian   33    Male    Analyst
```

[21] #Exercise 7:

```
5    Fiona   31  Female    Analyst
8      Ian   33    Male    Analyst
```

```python
#Exercise 7:

#Convert this DataFrame to a csv file.
df.to_csv('file1.csv', index=False)

#Reading the csv file.
read_df = pd.read_csv('file1.csv')

#displaying the contents
print('Displaying contents: \n', read_df)
```

```
Displaying contents:
      name  age  gender  occupation
0    Alice   25  Female  Programmer
1      Bob   30    Male     Manager
2  Charlie   35    Male     Analyst
3    David   22    Male  Programmer
4     Emma   28  Female     Manager
5    Fiona   31  Female     Analyst
6   George   27    Male  Programmer
7   Hannah   24  Female     Manager
8      Ian   33    Male     Analyst
9    Julia   29  Female  Programmer
```

Start coding or generate with AI.