In [1]:

```
data = [
    {
        "student number": 101,
        "name": "Andri",
        "subject": "Programming Basic",
        "grade": 80
    },
    {
        "student number": 102,
        "name": "Budi",
        "subject": "Programming Basic",
        "grade": 90
    },
    {
        "student number": 103,
        "name": "Cika",
        "subject": "Programming Basic",
        "grade": 100
    },
    {
        "student number": 104,
        "name": "Dedi",
        "subject": "Programming Basic",
        "grade": 100
    },
    {
        "student number": 105,
        "name": "Eka",
        "subject": "Programming Basic",
        "grade": 50
    },
    {
        "student number": 106,
        "name": "Feri",
        "subject": "Programming Basic",
        "grade": 40
    },
    {
        "student number": 107,
        "name": "Galih",
        "subject": "Programming Basic",
        "grade": 70
    },
    {
        "student number": 108,
        "name": "Huda",
        "subject": "Programming Basic",
        "grade": 70
    },
    {
        "student number": 109,
        "name": "Intan",
        "subject": "Programming Basic",
        "grade": 60
    },
    {
        "student number": 101,
        "name": "Andri",
        "subject": "Web Programming",
```

```
        "grade": 70
    },
    {
        "student number": 102,
        "name": "Budi",
        "subject": "Web Programming",
        "grade": 80
    },
    {
        "student number": 103,
        "name": "Cika",
        "subject": "Web Programming",
        "grade": 80
    },
    {
        "student number": 104,
        "name": "Dedi",
        "subject": "Web Programming",
        "grade": 90
    },
    {
        "student number": 105,
        "name": "Eka",
        "subject": "Web Programming",
        "grade": 90
    },
    {
        "student number": 106,
        "name": "Feri",
        "subject": "Web Programming",
        "grade": 60
    },
    {
        "student number": 107,
        "name": "Galih",
        "subject": "Web Programming",
        "grade": 95
    },
    {
        "student number": 108,
        "name": "Huda",
        "subject": "Web Programming",
        "grade": 85
    },
    {
        "student number": 109,
        "name": "Intan",
        "subject": "Web Programming",
        "grade": 90
    },
]
```

In [2]:

```
def higherThan80(data):
    result = []

    for item in data:
        if item.get("grade") > 80:
            result.append(item)

    return result
```

In [3]:

```
def printData(data):
    for item in data:
        print("====================")
        print("Student Number: ", item.get("student number"))
        print("Name: ", item.get("name"))
        print("Subject: ", item.get("subject"))
        print("Grade: ", item.get("grade"))
        print("====================")
        print("\n")
```

In [4]:

```
print("Data dengan nilai lebih dari 80\n")
printData(higherThan80(data))
```

```
Data dengan nilai lebih dari 80

====================
Student Number:  102
Name:  Budi
Subject:  Programming Basic
Grade:  90
====================


====================
Student Number:  103
Name:  Cika
Subject:  Programming Basic
Grade:  100
====================


====================
Student Number:  104
Name:  Dedi
Subject:  Programming Basic
Grade:  100
====================


====================
Student Number:  104
Name:  Dedi
Subject:  Web Programming
Grade:  90
====================


====================
Student Number:  105
Name:  Eka
Subject:  Web Programming
Grade:  90
====================


====================
Student Number:  107
Name:  Galih
Subject:  Web Programming
Grade:  95
====================


====================
Student Number:  108
Name:  Huda
Subject:  Web Programming
Grade:  85
====================
```

```
====================
Student Number:  109
Name:  Intan
Subject:  Web Programming
Grade:  90
====================
```

In [5]:

```
import pandas as pd
import matplotlib.pyplot as plt
```

In [6]:

```
dataFrame = pd.DataFrame(data)
dataFrame = dataFrame.set_index("student number")
dataFrame
```

Out[6]:

student number	name	subject	grade
101	Andri	Programming Basic	80
102	Budi	Programming Basic	90
103	Cika	Programming Basic	100
104	Dedi	Programming Basic	100
105	Eka	Programming Basic	50
106	Feri	Programming Basic	40
107	Galih	Programming Basic	70
108	Huda	Programming Basic	70
109	Intan	Programming Basic	60
101	Andri	Web Programming	70
102	Budi	Web Programming	80
103	Cika	Web Programming	80
104	Dedi	Web Programming	90
105	Eka	Web Programming	90
106	Feri	Web Programming	60
107	Galih	Web Programming	95
108	Huda	Web Programming	85
109	Intan	Web Programming	90

In [7]:

```
dataFrame["description"] = ["FAIL" if grade < 70 else "PASS" for grade in dataFrame["grade"]
dataFrame
```

Out[7]:

student number	name	subject	grade	description
101	Andri	Programming Basic	80	PASS
102	Budi	Programming Basic	90	PASS
103	Cika	Programming Basic	100	PASS
104	Dedi	Programming Basic	100	PASS
105	Eka	Programming Basic	50	FAIL
106	Feri	Programming Basic	40	FAIL
107	Galih	Programming Basic	70	PASS
108	Huda	Programming Basic	70	PASS
109	Intan	Programming Basic	60	FAIL
101	Andri	Web Programming	70	PASS
102	Budi	Web Programming	80	PASS
103	Cika	Web Programming	80	PASS
104	Dedi	Web Programming	90	PASS
105	Eka	Web Programming	90	PASS
106	Feri	Web Programming	60	FAIL
107	Galih	Web Programming	95	PASS
108	Huda	Web Programming	85	PASS
109	Intan	Web Programming	90	PASS

In [10]:

```
groupedDataFrame = dataFrame.groupby(["student number", "name"])["grade"].mean()
groupedDataFrame
```

Out[10]:

```
student number  name
101             Andri    75.0
102             Budi     85.0
103             Cika     90.0
104             Dedi     95.0
105             Eka      70.0
106             Feri     50.0
107             Galih    82.5
108             Huda     77.5
109             Intan    75.0
Name: grade, dtype: float64
```

In [9]:

```
groupedDataFrame.plot(kind="bar")
plt.xlabel("Name")
plt.ylabel("Grade")
plt.title("Mean of Student Grades Values")
plt.show()
```