Configuration

Processor Intel(R) Core(TM) i5-7200U CPU @ 2.50GHz 2.71 GHz

Installed RAM 8.00 GB (7.86 GB usable)

System type 64-bit operating system, x64-based processor

In [5]:
```python
import matplotlib.pyplot as plt

M=[50,60,70,80,90,100]

time_sec_sort_join = [17.101,16.008,14.231,13.937,13.645,13.374]

time_sec_hash_join = [185.28,148.01,130.91,105.50,96.84,87.38]
```

In [24]:
```python
import pandas as pd
dict = {'M': M, 'sort join in seconds ': time_sec_sort_join, 'hash join in seconds ': time_sec_hash_join}
pd.DataFrame(dict)
```

Out[24]:

	M	sort join in seconds	hash join in seconds
0	50	17.101	185.28
1	60	16.008	148.01
2	70	14.231	130.91
3	80	13.937	105.50
4	90	13.645	96.84
5	100	13.374	87.38

In [9]:
```python
plt.plot(M,time_sec_hash_join)
plt.title("hash merge join")
plt.xlabel("NUmber of blocks in memory")
plt.ylabel("time in seconds")
```

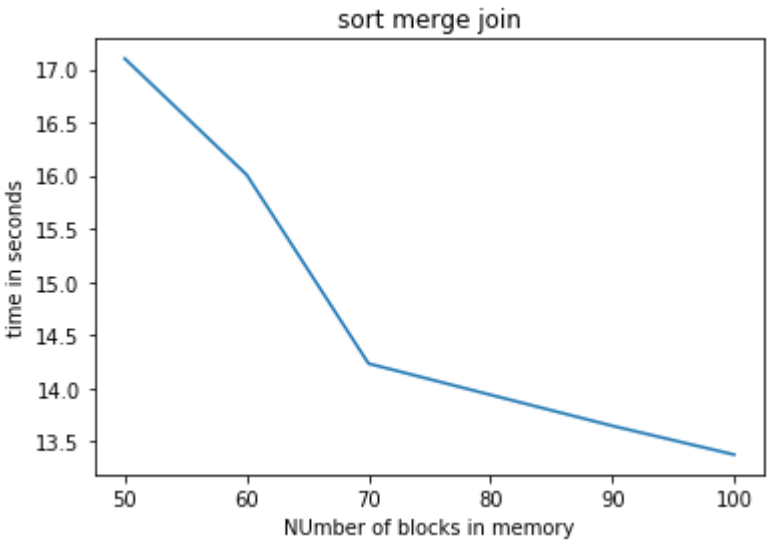Out[9]: Text(0,0.5,'time in seconds')
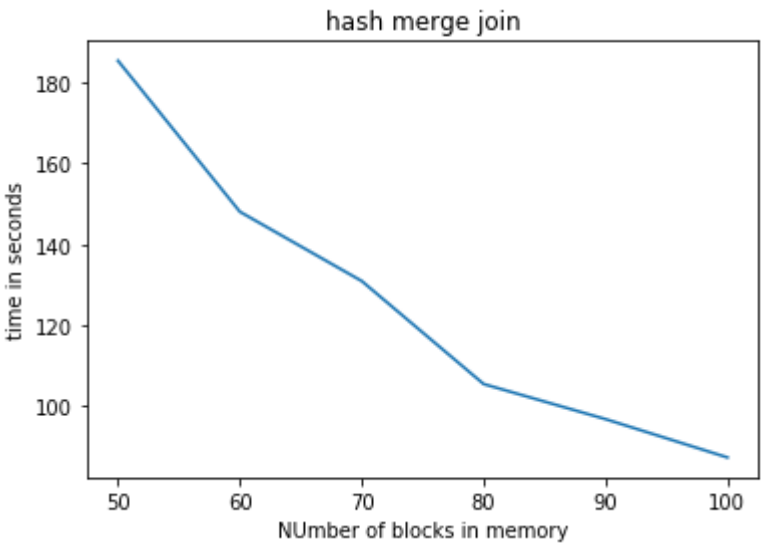
As expected as the memory size increases time decreases to sort

In [10]:
```python
plt.plot(M,time_sec_sort_join)
plt.title("sort merge join")
plt.xlabel("NUmber of blocks in memory")
plt.ylabel("time in seconds")
```

Out[10]: Text(0,0.5,'time in seconds')

As expected as the memory size increases time decreases to sort