

```
In [1]: import numpy as np
import pandas as pd

In [11]: ml = pd.read_excel('meritlist.xlsx')

In [12]: ml

Out[12]:
```

	First Name	Last Name	DOB	Registration Number	State	Maths	Physics	GK	English	Overall Marks	PFT
0	Aarav	Kurian	2007-04-20	880332	Maharashtra	20	2	0	20	42	PASS
1	Vivaan	Hayer	2005-06-10	501899	Maharashtra	13	9	19	17	58	PASS
2	Aditya	Ganguly	2005-01-02	382132	Maharashtra	19	4	13	16	52	PASS
3	Rohan	Vala	2004-08-31	551477	Maharashtra	17	25	6	10	58	PASS
4	Arjun	Suresh	2005-10-28	210291	Maharashtra	0	20	3	10	33	PASS
...	...	...	...	...	...	...	...	...	...	...	...
195	Chinmay	Grover	2006-10-13	386577	Tamil Nadu	7	11	10	11	39	PASS
196	Vignesh	Seth	2007-05-17	832906	Tamil Nadu	9	10	12	7	38	PASS
197	Harikrishna	Kaul	2004-03-08	582263	Tamil Nadu	11	9	6	5	31	PASS
198	Ragendra	Dey	2005-02-05	701311	Tamil Nadu	15	11	9	6	41	PASS
199	Krunal	Deol	2005-08-09	531292	Tamil Nadu	15	11	9	6	41	PASS

200 rows × 11 columns

```
In [13]: # let us filter out those candidates who are failed in PFT
ml = ml[ml['PFT'] == 'PASS']

In [14]: ml

Out[14]:
```

	First Name	Last Name	DOB	Registration Number	State	Maths	Physics	GK	English	Overall Marks	PFT
0	Aarav	Kurian	2007-04-20	880332	Maharashtra	20	2	0	20	42	PASS
1	Vivaan	Hayer	2005-06-10	501899	Maharashtra	13	9	19	17	58	PASS
2	Aditya	Ganguly	2005-01-02	382132	Maharashtra	19	4	13	16	52	PASS
3	Rohan	Vala	2004-08-31	551477	Maharashtra	17	25	6	10	58	PASS
4	Arjun	Suresh	2005-10-28	210291	Maharashtra	0	20	3	10	33	PASS
...	...	...	...	...	...	...	...	...	...	...	...
195	Chinmay	Grover	2006-10-13	386577	Tamil Nadu	7	11	10	11	39	PASS
196	Vignesh	Seth	2007-05-17	832906	Tamil Nadu	9	10	12	7	38	PASS
197	Harikrishna	Kaul	2004-03-08	582263	Tamil Nadu	11	9	6	5	31	PASS
198	Ragendra	Dey	2005-02-05	701311	Tamil Nadu	15	11	9	6	41	PASS
199	Krunal	Deol	2005-08-09	531292	Tamil Nadu	15	11	9	6	41	PASS

171 rows × 11 columns

```
In [15]: ml.shape

Out[15]: (171, 11)

In [16]: ml

Out[16]:
```

	First Name	Last Name	DOB	Registration Number	State	Maths	Physics	GK	English	Overall Marks	PFT
0	Aarav	Kurian	2007-04-20	880332	Maharashtra	20	2	0	20	42	PASS
1	Vivaan	Hayer	2005-06-10	501899	Maharashtra	13	9	19	17	58	PASS
2	Aditya	Ganguly	2005-01-02	382132	Maharashtra	19	4	13	16	52	PASS
3	Rohan	Vala	2004-08-31	551477	Maharashtra	17	25	6	10	58	PASS
4	Arjun	Suresh	2005-10-28	210291	Maharashtra	0	20	3	10	33	PASS
...	...	...	...	...	...	...	...	...	...	...	...
195	Chinmay	Grover	2006-10-13	386577	Tamil Nadu	7	11	10	11	39	PASS
196	Vignesh	Seth	2007-05-17	832906	Tamil Nadu	9	10	12	7	38	PASS
197	Harikrishna	Kaul	2004-03-08	582263	Tamil Nadu	11	9	6	5	31	PASS
198	Ragendra	Dey	2005-02-05	701311	Tamil Nadu	15	11	9	6	41	PASS
199	Krunal	Deol	2005-08-09	531292	Tamil Nadu	15	11	9	6	41	PASS

171 rows × 11 columns

```
In [17]: # Filter out those who have scored 5 marks or less in any one of the subjects: Maths, Physics, GK, or English
ml = ml[(ml['Maths'] >= 5) & (ml['English'] >= 5) & (ml['Physics'] >= 5) & (ml['GK'] >= 5)]

In [20]: ml

Out[20]:
```

	First Name	Last Name	DOB	Registration Number	State	Maths	Physics	GK	English	Overall Marks	PFT
1	Vivaan	Hayer	2005-06-10	501899	Maharashtra	13	9	19	17	58	PASS
3	Rohan	Vala	2004-08-31	551477	Maharashtra	17	25	6	10	58	PASS
5	Karan	Ratta	2005-02-14	586121	Maharashtra	24	20	17	18	79	PASS
7	Kabir	Dani	2007-05-17	518035	Maharashtra	10	10	12	12	44	PASS
9	Vihaan	Desai	2007-11-14	170922	Maharashtra	7	18	16	22	63	PASS
...	...	...	...	...	...	...	...	...	...	...	...
195	Chinmay	Grover	2006-10-13	386577	Tamil Nadu	7	11	10	11	39	PASS
196	Vignesh	Seth	2007-05-17	832906	Tamil Nadu	9	10	12	7	38	PASS
197	Harikrishna	Kaul	2004-03-08	582263	Tamil Nadu	11	9	6	5	31	PASS
198	Ragendra	Dey	2005-02-05	701311	Tamil Nadu	15	11	9	6	41	PASS
199	Krunal	Deol	2005-08-09	531292	Tamil Nadu	15	11	9	6	41	PASS

80 rows × 11 columns

```
In [21]: #count number of students in each state
state_count=ml['State'].value_counts()
print(state_count)

Tamil Nadu      24
Rajasthan       16
Maharashtra     10
Bihar           10
Kerala          6
Gujarat         5
Andhra Pradesh  5
Punjab          4
Name: State, dtype: int64

In [22]: ml.info

Out[22]:
```

```
<bound method DataFrame.info of
1      Vivaan      Hayer  2005-06-10      501899  Maharashtra
3      Rohan      Vala  2004-08-31      551477  Maharashtra
5      Karan      Ratta  2005-02-14      586121  Maharashtra
7      Kabir      Dani  2007-05-17      518035  Maharashtra
9      Vihaan     Desai  2007-11-14      170922  Maharashtra
..      ...      ...      ...      ...      ...
195     Chinmay    Grover  2006-10-13      386577    Tamil Nadu
196     Vignesh     Seth  2007-05-17      832906    Tamil Nadu
197  Harikrishna    Kaul  2004-03-08      582263    Tamil Nadu
198     Ragendra    Dey  2005-02-05      701311    Tamil Nadu
199      Krunal     Deol  2005-08-09      531292    Tamil Nadu

   Maths  Physics  GK  English  Overall Marks  PFT
1      13      9  19      17      58  PASS
3      17     25   6      10      58  PASS
5      24     20  17      18      79  PASS
7      10     10  12     12      44  PASS
9       7     18  16     22      63  PASS
..      ...     ...   ...     ...     ...
195     7     11  10     11     39  PASS
196     9     10  12     7      38  PASS
197    11     9   6     5      31  PASS
198    15    11   9     6      41  PASS
199    15    11   9     6      41  PASS

[80 rows x 11 columns]>
```

```
In [28]: ml.describe()

Out[28]:
```

	Registration Number	Maths	Physics	GK	English	Overall Marks
count	80.000000	80.000000	80.000000	80.000000	80.000000	80.000000
mean	567185.775000	14.075000	14.537500	14.462500	14.162500	57.237500
std	250903.367899	5.588811	6.121024	6.118955	5.862224	14.130713
min	102149.000000	5.000000	5.000000	5.000000	5.000000	30.000000
25%	376966.000000	9.000000	9.000000	9.000000	10.000000	45.500000
50%	541943.000000	13.500000	13.000000	14.000000	14.000000	58.500000
75%	803297.250000	18.250000	20.000000	19.250000	20.000000	67.000000
max	971395.000000	25.000000	25.000000	25.000000	25.000000	90.000000

```
In [29]: # now we have 80 students left and we want overall 30 students in our final merit list so we have state wise seat vacancy
# State seat distribution
state_seat_distribution = {
    'Tamil Nadu': 7,
    'Rajasthan': 6,
    'Maharashtra': 4,
    'Bihar': 4,
    'Kerala': 3,
    'Gujarat': 2,
    'Andhra Pradesh': 2,
    'Punjab': 2}

In [31]: # Sort by overall marks in descending order, and in case of tie, by age (older first)
ml_sorted = ml.sort_values(by=['Overall Marks', 'DOB'], ascending=[False, False])

In [32]: ml

Out[32]:
```

	First Name	Last Name	DOB	Registration Number	State	Maths	Physics	GK	English	Overall Marks	PFT
1	Vivaan	Hayer	2005-06-10	501899	Maharashtra	13	9	19	17	58	PASS
3	Rohan	Vala	2004-08-31	551477	Maharashtra	17	25	6	10	58	PASS
5	Karan	Ratta	2005-02-14	586121	Maharashtra	24	20	17	18	79	PASS
7	Kabir	Dani	2007-05-17	518035	Maharashtra	10	10	12	12	44	PASS
9	Vihaan	Desai	2007-11-14	170922	Maharashtra	7	18	16	22	63	PASS
...	...	...	...	...	...	...	...	...	...	...	...
195	Chinmay	Grover	2006-10-13	386577	Tamil Nadu	7	11	10	11	39	PASS
196	Vignesh	Seth	2007-05-17	832906	Tamil Nadu	9	10	12	7	38	PASS
197	Harikrishna	Kaul	2004-03-08	582263	Tamil Nadu	11	9	6	5	31	PASS
198	Ragendra	Dey	2005-02-05	701311	Tamil Nadu	15	11	9	6	41	PASS
199	Krunal	Deol	2005-08-09	531292	Tamil Nadu	15	11	9	6	41	PASS

80 rows × 11 columns

```
In [36]: # now allocating students for each state
final_merit_list = []
for state, seats in state_seat_distribution.items():
    state_candidates = ml_sorted[ml_sorted['State'] == state].head(seats)
    final_merit_list.append(state_candidates)

In [37]: ml

Out[37]:
```

	First Name	Last Name	DOB	Registration Number	State	Maths	Physics	GK	English	Overall Marks	PFT
1	Vivaan	Hayer	2005-06-10	501899	Maharashtra	13	9	19	17	58	PASS
3	Rohan	Vala	2004-08-31	551477	Maharashtra	17	25	6	10	58	PASS
5	Karan	Ratta	2005-02-14	586121	Maharashtra	24	20	17	18	79	PASS
7	Kabir	Dani	2007-05-17	518035	Maharashtra	10	10	12	12	44	PASS
9	Vihaan	Desai	2007-11-14	170922	Maharashtra	7	18	16	22	63	PASS
...	...	...	...	...	...	...	...	...	...	...	...
195	Chinmay	Grover	2006-10-13	386577	Tamil Nadu	7	11	10	11	39	PASS
196	Vignesh	Seth	2007-05-17	832906	Tamil Nadu	9	10	12	7	38	PASS
197	Harikrishna	Kaul	2004-03-08	582263	Tamil Nadu	11	9	6	5	31	PASS
198	Ragendra	Dey	2005-02-05	701311	Tamil Nadu	15	11	9	6	41	PASS
199	Krunal	Deol	2005-08-09	531292	Tamil Nadu	15	11	9	6	41	PASS

80 rows × 11 columns

```
In [42]: final_merit_list

Out[42]:
```

	First Name	Last Name	DOB	Registration Number	State	Maths	Physics	GK	English	Overall Marks	PFT
169	Prakash	Mahajan	2005-12-27	153518	Tamil Nadu	20	14	19	14	67	PASS
171	Narendra	Krishnamurthy	2005-03-13	451012	Tamil Nadu	16	5	20	25	66	PASS
173	Sachin	Rana	2004-08-22	530226	Tamil Nadu	17	24	5	13	59	PASS
174	Sharvan	Jha	2004-03-10	847725	Tamil Nadu	23	7	7	21	58	PASS
168	Bhushan	Ganguly	2003-12-19	102149	Tamil Nadu	5	20	18	14	57	PASS
179	Anurag	Mani	2004-02-11	782354	Tamil Nadu	5	13	18	20	56	PASS
193	Sidharth	Kadakia	2004-09-11	638645	Tamil Nadu	9	20	13	10	52	PASS
...	...	...	...	...	...	...	...	...	...	...	...
111	Anmol	Chakrabarti	2007-06-30	692360	Rajasthan	22	25	24	17	88	PASS
121	Chetan	Gour	2007-06-15	479228	Rajasthan	23	20	17	25	85	PASS
112	Umesh	Lal	2006-04-20	925633	Rajasthan	18	18	23	8	67	PASS
115	Neeraj	Mand	2005-03-27	335998	Rajasthan	19	10	22	16	67	PASS
131	Himanshu	Tella	2006-05-17	806010	Rajasthan	9	22	20	14	65	PASS
119	Virat	Butala	2007-04-21	719255	Rajasthan	11	16	14	22	63	PASS
...	...	...	...	...	...	...	...	...	...	...	...
140	Nishit	Banerjee	2006-10-06	418065	Kerala	17	24	14	24	79	PASS
155	Yogesh	Bhat	2005-02-21	210303	Kerala	17	21	9	24	71	PASS
156	Ajay	Magar	2007-08-10	147462	Kerala	21	18	19	7	65	PASS
...	...	...	...	...	...	...	...	...	...	...	...
50	Varun	Lal	2005-03-26	868800	Gujarat	23	23	16	9	71	PASS
56	Piyush	Sama	2005-07-07	454018	Gujarat	10	14	19	25	68	PASS
...	...	...	...	...	...	...	...	...	...	...	...
84	Satyam	Srinivas	2006-04-24	331930	Andhra Pradesh	19	12	16	21	68	PASS
88	Shivam	Khatri	2005-05-16	858571	Andhra Pradesh	18	8	23	16	65	PASS
74	Hemant	Loyal	2005-03-08	969577	Punjab	23	25	22	20	90	PASS
67	Ranveer	Dave	2004-12-24	278683	Punjab	11	10	22	62	PASS	

```
In [49]: # Save final merit list to CSV or Excel
final_merit_ml.to_csv('final_merit_list.csv', index=False)

In [50]: final_merit_ml.to_csv('F:/final_merit_list.csv', index=False)

In [ ]:
```