Program Structures & Algorithms

Spring 2022

Assignment No. 3

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- **Task**

Implement the codes and determine the relationship between the number of objects (n) and the number of pairs (m).

- **Relationship Conclusion**

$\boldsymbol{m} \propto \boldsymbol{n}$. **m** is proportional to **n**

- **Evidence / Graph**

I pick 50 different values of **n** randomly from 0 to 500. For each **n**, I run the count() function 100 times and take the average number of operations. It seems that **m** is proportional to **n** in the scatter plot.

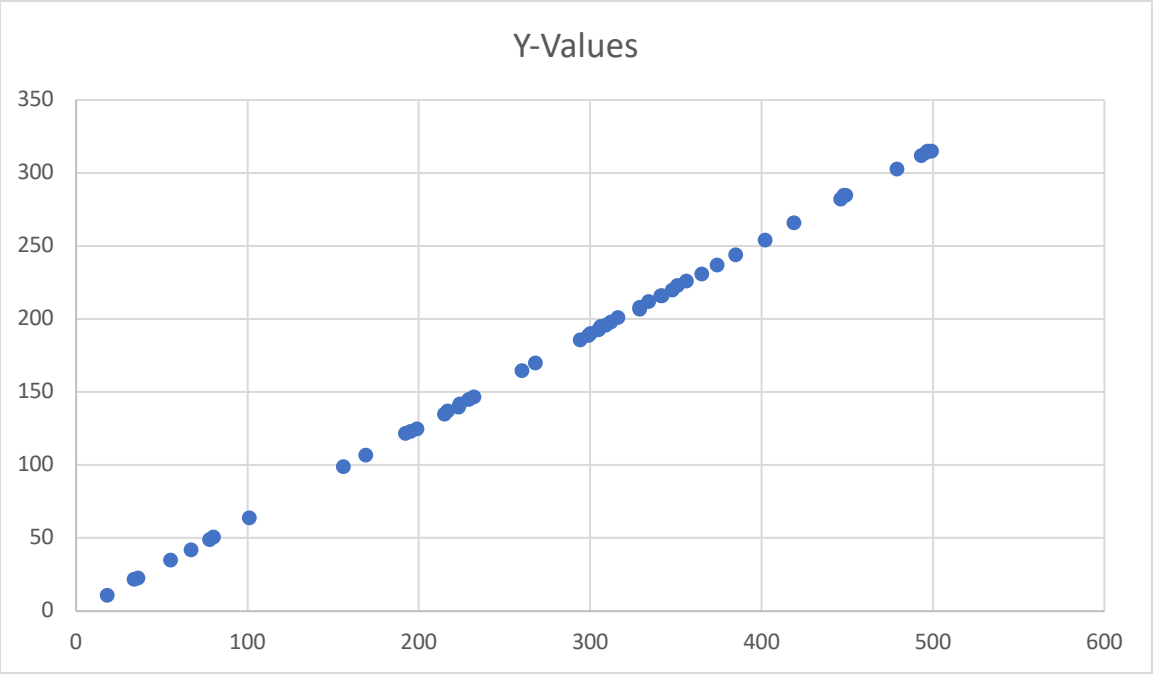
n	18	34	36	55	67	78	80	101	156	169
m	11	22	23	35	42	49	51	64	99	107

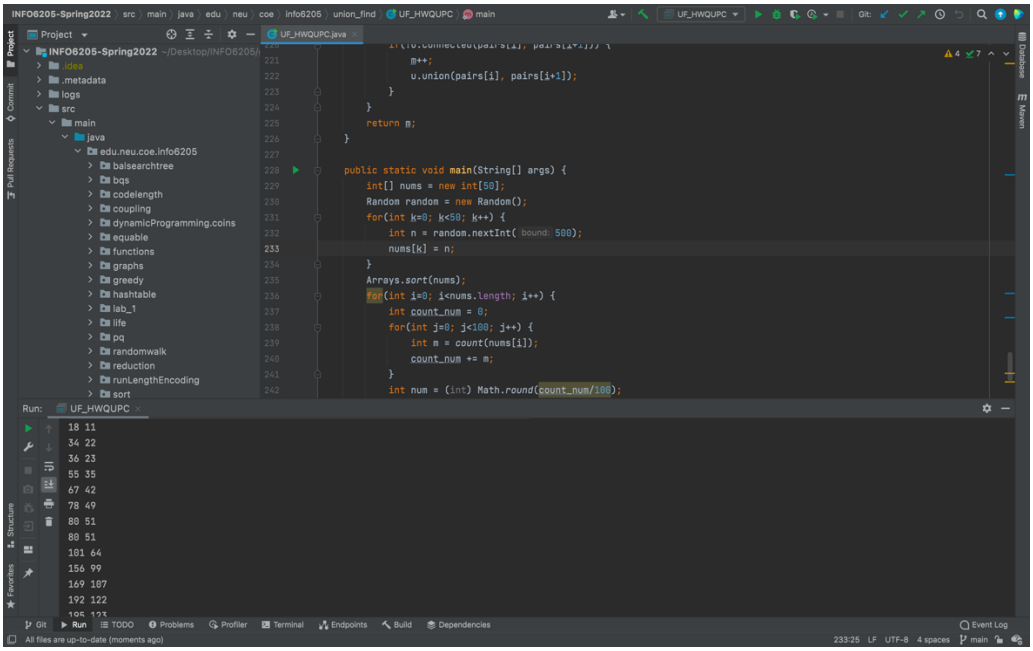
n	192	195	199	215	217	223	224	229	232	260
m	122	125	135	137	140	142	145	147	165	170

n	268	294	299	300	305	306	309	312	316	329
m	170	186	189	190	193	195	196	198	201	207

n	329	334	341	342	348	351	356	365	374	385
m	208	212	216	216	220	223	226	231	237	244

n	402	419	446	448	449	479	493	496	497	499
m	254	266	282	285	285	303	312	314	315	315





- **Unit tests result**