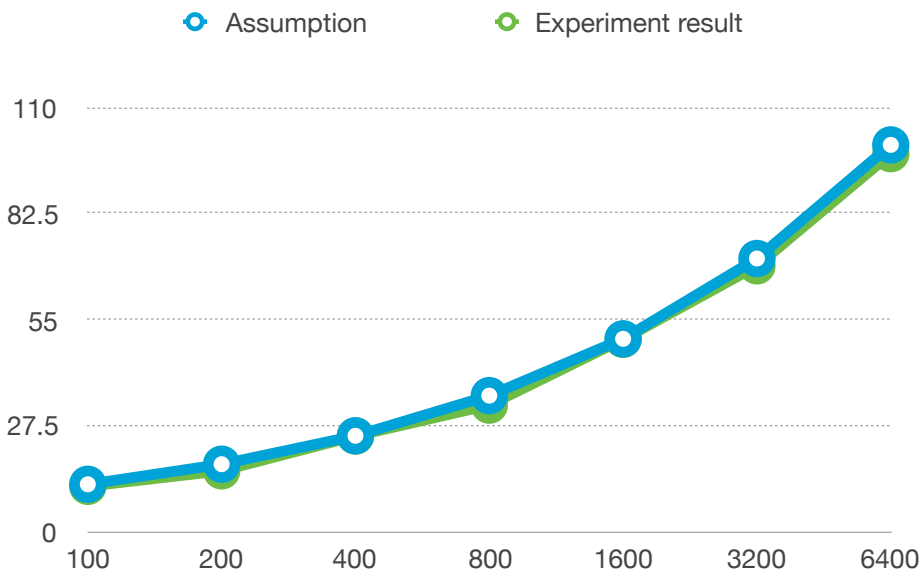
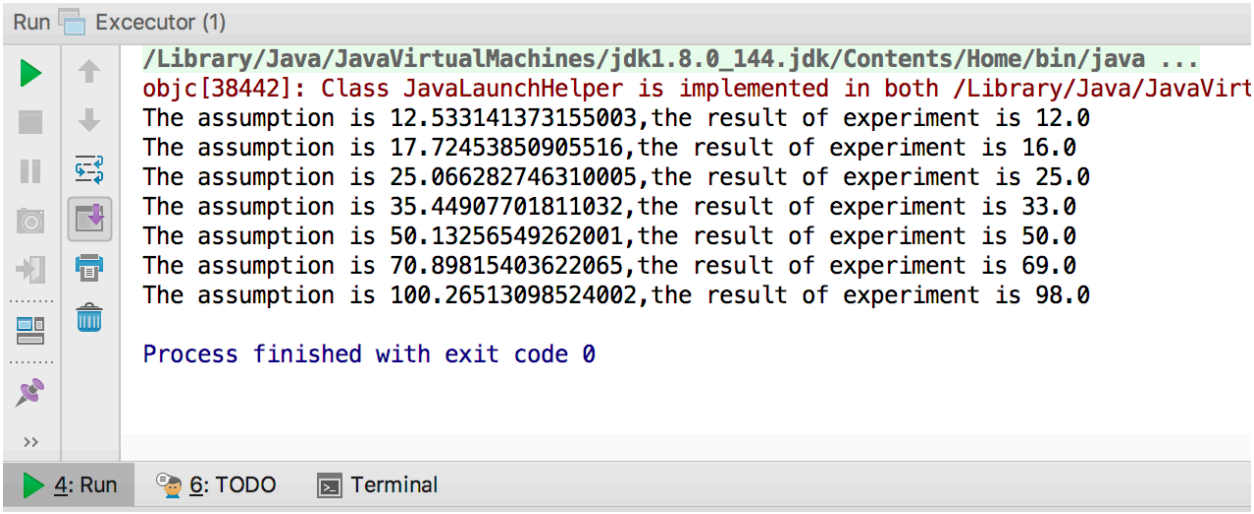
Assignment 5: Birthdays and Picture Cards

Birthday problem

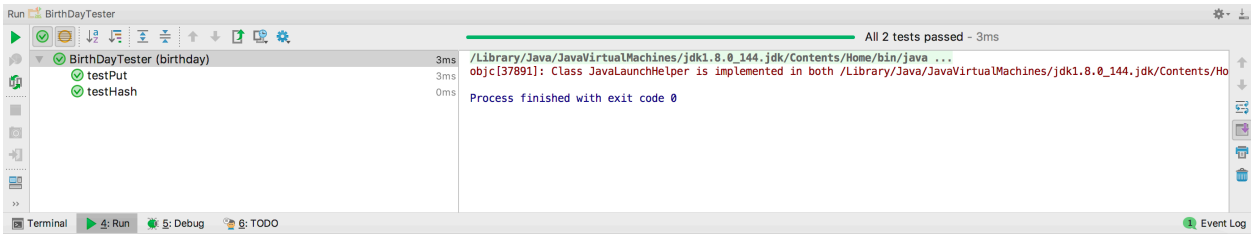
Birthday Problem

M	ASSUMPTION	EXPERIMENT RESULT
100	12.533141373155003	12
200	17.72453850905516	16
400	25.066282746310005	25
800	35.44907701811032	33
1600	50.13256549262001	50
3200	70.89815403622065	69
6400	100.26513098524002	98





Test result:



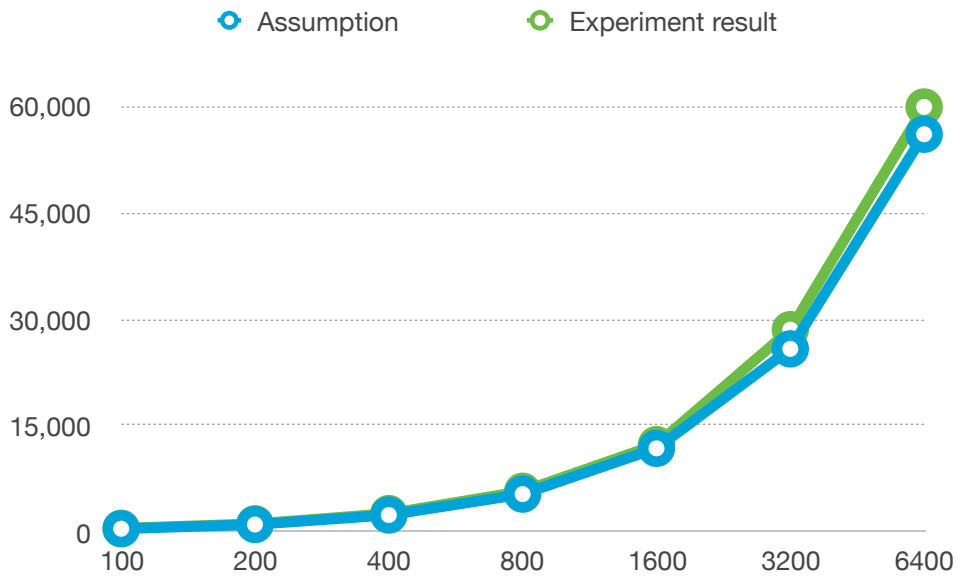
Conclusion:

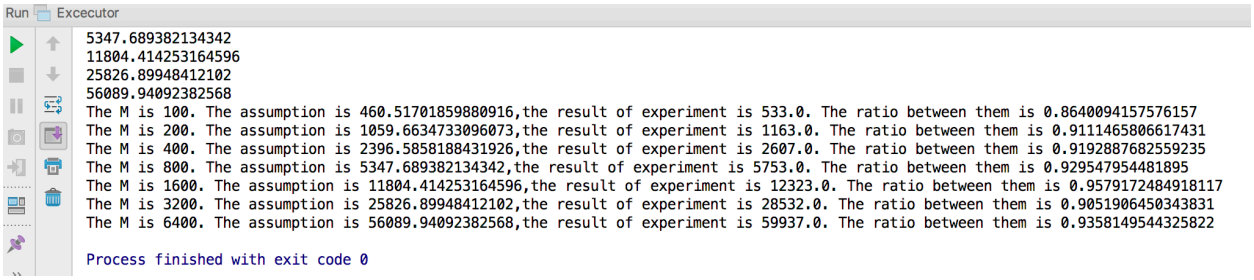
According to the above results, we can know that with M growing, the ratio between assumptions and experiment results is extra overlapped，so we can prove our assumption.

Coupon Collector ’s problem

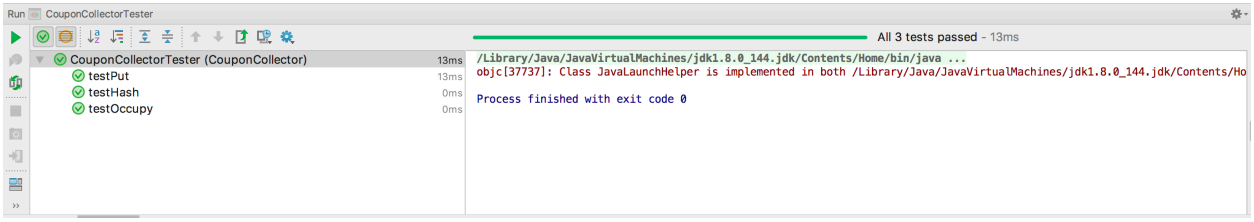
Coupon Collector Problem

M	ASSUMPTION	EXPERIMENT RESULT
100	460.51701859880916	533
200	1059.6634733096073	1,163
400	2396.5858188431926	2,607
800	5347.689382134342	5,753
1600	11804.414253164596	12,323
3200	25826.89948412102	28532
6400	56089.94092382568	59937





Test result:



Conclusion:

With M growing, the ratio between assumptions and experiment results is highly overlapped，so we can prove our assumption.