Assignment report: qichaow
I imported all the libraries and data for the following use.

Q1: Use a while loop to count how many folds would make the height achieve 8848000 mm by setting up t and height be 0 and iterating them every trial. The equation of height is 2^t. t is te number of folds.

Q2: Use the equation equ_v= v(0)*exp(-at) by applying the solver function and it can return the result in a fast way.

Q3: Use the yearly return with interest rate equation to find out the total deposit.

Q4: Use the equation provided on piazza to calculate the loan payment.

Q5: I calculated the cumulative sum of profits using the same equation as Q3 and then use while loop to count how many days it would take the cumulative profits to achieve 100000. The blue curve represents the cumulated profits and the red point on the graph indicated the markeven day, which is the 70^{th}.

Q6: First, I made the date be the index, then generated all the dates from the first day to the end, and reformed the index. After that, I used interpolate to fill in the missing values in the missing date. Then, I found out the corresponding dates when the number of cases and death greater than 100, 500, 1000, 2000, 5000. Finally I plotted these number and dates shown as circles in the graph for both cases and death.

Q7: I calculated the growth rate by subtracting numbers from adjacent days and then take the mean of all these differences.

Q8: We can see from the graph that number of deaths are similar to cases at first and become less than the cases as time passes. So, the ratio should be smaller than 1 and around 0.5, which matches my calculation 0.5578.

Q9: I first selected all the dates between 2014-01-01 and 2015-08-31, and found out the adjusted closing prices for two stocks and the plotted in the graph. TLT in general has a greater adj closing price than SPY.

Q10: I used the daily return equation r(t)= p(t)/p(t-1)-1 to calculate the return for both stocks every day and save them in the list. Then, call the list by finding out the min, max and average.