Project D. (Advanced Monte Carlo)

* // For this exercise I created a global function and included it in get\_SD\_and\_SE.h.
* boost::tuple<double,double> get\_SD\_and\_SE(vector<double> input, double r, double T)
* It takes a vector of size NSim and r and T and will output SD and SE.
* I used following equation to calculate the Standard Deviation.

SD = root \* exp (-rt) / (M-1)

I don’t think there should be a square root operation for (M-1) term.

Number of sub intervals: 900

Number of simulations: 100 000

Answer Part a)

**For Batch 1:**

Call Price: 2.11662

SD: 0.0142078

SE: 4.4929e-005

Put Price: 5.87702

SD: 0.019153

SE: 6.05672e-005

**For Batch 2:**

Call Price: 7.91053

SD: 0.0414185

SE: 0.000130977

Put Price: 8.01616

SD: 0.0414185

SE: 0.000130977

Price, after discounting: 0.200903,

Number of times origin is hit: 0

Standard Deviation: 0.00322095

Standard Error: 1.01855e-005

**For Batch 3:**

Call Price: 0.200903

SD: 0.00322095

SE: 1.01855e-005

Put Price: 4.08337

SD: 0.00662296

SE: 2.09436e-005

**For Batch 4:**

Call Price: 91.3185

SD: 1.14818

SE: 0.00363085

Put Price: 1.26111

SD: 0.00779842

SE: 2.46608e-005