problem1:

gbsm method:

	Type	Delta	Gamma	Vega	Theta	cRho
0	Call	0.082971	0.016823	6.938711	-8.126522	1.132954
1	Put	-0.916550	0.016823	6.938711	-1.940991	-12.515272

finite method bgsm:

	Type	Delta	Gamma	Vega	Theta	Rho	CarryRho
0	Call	0.082971	0.016823	6.938711	-8.126522	-0.030360	1.132954
1	Put	-0.916550	0.016823	6.938711	-1.940991	-1.242731	-12.515272

binomial tree method:

call bt value: 0.30042964161620433

Put bt value: 14.55517761492641

	Type	Delta	Gamma	Vega	Theta	Rho	CarryRho
0	Call	0.070653	0.016386	6.072778	-7.161013	0.944852	-0.025449
1	Put	-0.937020	0.015422	5.569032	-0.313041	-12.437668	0.936706

problem 2:

I use the currentS =150 to match julia output

	Portfolio	Type	Underlying	...	CurrentPrice	IV	Delta
0	Straddle	Option	AAPL	...	6.80	0.282054	81.949966
1	Straddle	Option	AAPL	...	4.85	0.244031	-70.326905
2	SynLong	Option	AAPL	...	6.80	0.282054	81.949966
3	SynLong	Option	AAPL	...	4.85	0.244031	70.326905
4	CallSpread	Option	AAPL	...	6.80	0.282054	81.949966
5	CallSpread	Option	AAPL	...	2.21	0.244541	-45.006182
6	PutSpread	Option	AAPL	...	4.85	0.244031	-70.326905
7	PutSpread	Option	AAPL	...	1.84	0.272600	29.418603
8	Stock	Stock	AAPL	...	151.03	NaN	151.030000
9	Call	Option	AAPL	...	6.80	0.282054	81.949966
10	Put	Option	AAPL	...	4.85	0.244031	-70.326905
11	CoveredCall	Stock	AAPL	...	151.03	NaN	151.030000
12	CoveredCall	Option	AAPL	...	4.05	0.258510	-59.122377
13	ProtectedPut	Stock	AAPL	...	151.03	NaN	151.030000
14	ProtectedPut	Option	AAPL	...	3.01	0.256165	-47.748704

the dela above should be combined to get portfolio delta

	AAPL_Options.csvPortfolio	VaR95	ES95
0	Call	5.995088	6.425417
1	CallSpread	6.376190	9.145199
2	CoveredCall	12.977551	16.616919
3	ProtectedPut	11.754719	15.593018
4	Put	5.177536	5.545547
5	PutSpread	5.186521	6.477179

6	Stock	14.710579	18.075217
7	Straddle	5.607537	6.113046
8	SynLong	6.805999	9.715013

the VaR and ES is not comparable with last week since the currentS and current date are not the same

Problem3:

	Stock	Weight	Er	UnconstWeight
0	AAPL	0.0742	0.179502	0.074340
1	META	0.0411	0.262582	0.040816
2	UNH	0.0009	0.056671	0.001339
3	MA	0.0727	0.148799	0.073552
4	MSFT	0.1099	0.197232	0.110709
5	NVDA	0.0805	0.364049	0.080826
6	HD	0.0000	0.152052	-0.005236
7	PFE	0.0000	0.083391	-0.002198
8	AMZN	0.0317	0.245892	0.032024
9	BRK-B	0.0502	0.120461	0.051504
10	PG	0.1478	0.084281	0.147766
11	XOM	0.0496	0.075752	0.049484
12	TSLA	0.0319	0.326127	0.032076
13	JPM	0.0358	0.130938	0.035597
14	V	0.0283	0.142891	0.027722
15	DIS	0.0123	0.129287	0.012601
16	GOOGL	0.0480	0.219260	0.047696
17	JNJ	0.0567	0.072175	0.058429
18	BAC	0.0930	0.156485	0.094479
19	CSCO	0.0354	0.135270	0.036475

Expected Return = 0.17070396592162555

Expected Vol = 0.12035360741054416

Expected SR = 1.0029110761083067