Project B) Solutions.

/\* In this problem I created a PAmericanOption class.

Inside the class I created a public struct called struct OptionData.

(Encapsulating option parameters without T).

{

double K\_s;

double r\_s;

double sig\_s;

double b\_s;

};

Then I created a constructor inside the PAmericanOption class and it automatically creates the OptionData sturct.

Then I created pricing.h file and included global functions there to calculate PerpetualCall and PerpetualPut.

In adition to general PerpetualCall and PerpetualPut functions I wrote two additional overloaded PerpetualCall and PerpetualPut functions to accept structs.

Finally I called functions inside pricing.h using class memebr fucntions CallPrice\_struct and PutPrice\_struct.

\*/

1. I encapsulated option parameters using a struct and then encapsulated the struct in PAmericanOption class. PerpetualCall and PerpetualPut fucntions (overloaded with sturct OptionData) are included inside pricing.h file.
2. K = 100; sig = 0.1; r = 0.1; b =0.02; S = 110;

Enter above values for Part b) solution

K: 100

S: 110

sig: 0.1

r: 0.1

b: 0.02

Value of C using struct :18.5035

Value of P using struct :3.03106

C and P as a function of S = [10,50], step size = 1

C P

0.00826235, 9.03489e+006,

0.011227, 4.99557e+006,

0.0148535, 2.9084e+006,

0.0192158, 1.76823e+006,

0.0243891, 1.11544e+006,

0.03045, 726383,

0.0374762, 486308,

0.0455465, 333599,

0.054741, 233828,

0.0651405, 167076,

0.076827, 121457,

0.0898835, 89678.6,

0.104394, 67156,

0.120442, 50940.7,

0.138115, 39097.9,

0.157497, 30334.3,

0.178677, 23770.5,

0.201742, 18799.2,

0.226781, 14995,

0.253883, 12055.9,

0.283138, 9764.83,

0.314637, 7964.02,

0.348471, 6537.48,

0.384732, 5399.17,

0.423512, 4484.6,

0.464906, 3745.05,

0.509007, 3143.37,

0.555908, 2651.05,

0.605706, 2246.02,

0.658495, 1911.08,

0.714373, 1632.76,

0.773434, 1400.4,

0.835777, 1205.56,

0.901499, 1041.49,

0.970699, 902.784,

1.04347, 785.068,

1.11993, 684.8,

1.20015, 599.097,

1.28425, 525.597,

1.37233, 462.36,

1.46448, 407.787,