

Command Prompt - Project_mid.exe input1

Input File: input1

We owe 1790.85 in 10 years

Number of Cash Flows: 5

Cash Flow #1

Price = 1131.27

Maturity = 10

Percentage of Face Value that would meet the obligation = 0.892239

Yield to Maturity = 0.0499999

Duration = 7.7587

Duration {to be used in LP_formulation below} = 8.69576

{Note} 7.7587 = 8.69576 X 0.892239

Convexity = 70.4264

Convexity {to be used in LP_formulation below} = 78.9322

{Note} 70.4264 = 78.9322 X 0.892239

Cash Flow #2

Price = 1069.88

Maturity = 15

Percentage of Face Value that would meet the obligation = 0.943436

Yield to Maturity = 0.0625639

Duration = 9.93582

Duration {to be used in LP_formulation below} = 10.5315

{Note} 9.93582 = 10.5315 X 0.943436

Convexity = 119.831

Convexity {to be used in LP_formulation below} = 127.016

{Note} 119.831 = 127.016 X 0.943436

Cash Flow #3

Price = 863.5

Maturity = 30

Percentage of Face Value that would meet the obligation = 1.16892

Yield to Maturity = 0.07

Duration = 13.6774

Duration {to be used in LP_formulation below} = 11.7009

{Note} 13.6774 = 11.7009 X 1.16892

Convexity = 262.769

Convexity {to be used in LP_formulation below} = 224.796

{Note} 262.769 = 224.796 X 1.16892

Cash Flow #4

Price = 1148.75

Maturity = 12

Percentage of Face Value that would meet the obligation = 0.878662

Yield to Maturity = 0.0574999

Duration = 8.58082

Duration {to be used in LP_formulation below} = 9.76578

{Note} 8.58082 = 9.76578 X 0.878662

Convexity = 87.6798

Convexity {to be used in LP_formulation below} = 99.7879

{Note} 87.6798 = 99.7879 X 0.878662

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Cash Flow #5
Price = 1121.39
Maturity = 11
Percentage of Face Value that would meet the obligation = 0.9001
Yield to Maturity = 0.0549998
Duration = 8.20531
Duration {to be used in LP_formulation below} = 9.116
{Note} 8.20531 = 9.116 X 0.9001
Convexity = 79.1966
Convexity {to be used in LP_formulation below} = 87.9864
{Note} 79.1966 = 87.9864 X 0.9001
*****
Average YTM{which I use to computr PV of Debt} = 0.0590127
Present value of debt = 1009.36
*****
Largest Convexity we can get is: 143.262
%Cash Flow:1  0.554367
%Cash Flow:2  0
%Cash Flow:3  0.442645
%Cash Flow:4  0
%Cash Flow:5  0
That is, buy
$627.139 of Cash Flow#1
$382.224 of Cash Flow#3
Press any key to continue . . .

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The result with input1

```

5
1131.27 10 67 67 67 67 67 67 67 67 67 1067
1069.88 15 69.88 69.88 69.88 69.88 69.88 69.88 69.88 69.88 69.88 69.88 69.88 69.88 69.88 69.88 69.88
1069.88
863.5 30 59 59 59 59 59 59 59 59 59 59 59 59 59 59 59 59 59 59 59 59 59 59 59 59 59 59 59 59 59 59 59 59
1059
1148.75 12 75 75 75 75 75 75 75 75 75 75 75 1075
1121.39 11 70 70 70 70 70 70 70 70 70 70 1070
1790.85 10

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Input File: input2
We owe 1790.85 in 10 years
Number of Cash Flows: 3
-----
Cash Flow #1
Price = 1131.27
Maturity = 10
Percentage of Face Value that would meet the obligation = 0.934116
Yield to Maturity = 0.0499999
Duration = 7.7587
Duration {to be used in LP_formulation below} = 8.30593
{Note} 7.7587 = 8.30593 X 0.934116
Convexity = 70.4264
Convexity {to be used in LP_formulation below} = 75.3936
{Note} 70.4264 = 75.3936 X 0.934116
-----
Cash Flow #2
Price = 1121.39
Maturity = 11
Percentage of Face Value that would meet the obligation = 0.942346
Yield to Maturity = 0.0549998
Duration = 8.20531
Duration {to be used in LP_formulation below} = 8.70733
{Note} 8.20531 = 8.70733 X 0.942346
Convexity = 79.1966
Convexity {to be used in LP_formulation below} = 84.042
{Note} 79.1966 = 84.042 X 0.942346
-----
Cash Flow #3
Price = 1148.75
Maturity = 12
Percentage of Face Value that would meet the obligation = 0.919902
Yield to Maturity = 0.0574999
Duration = 8.58082
Duration {to be used in LP_formulation below} = 9.32798
{Note} 8.58082 = 9.32798 X 0.919902
Convexity = 87.6798
Convexity {to be used in LP_formulation below} = 95.3144
{Note} 87.6798 = 95.3144 X 0.919902
*****
Average YTM{which I use to computr PV of Debt} = 0.0541665
Present value of debt = 1056.74
*****
There is no portfolio that meets the duration constraint of 10years
Press any key to continue . . .

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The result with input2

3

1131.27 10 67 67 67 67 67 67 67 67 67 1067

1121.39 11 70 70 70 70 70 70 70 70 70 70 1070

1148.75 12 75 75 75 75 75 75 75 75 75 75 1075

1790.85 10

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C:\Users\43739\source\repos\Project_mid\Debug>Project_mid.exe input3
Input File: input3
We owe 1790.85 in 10 years
Number of Cash Flows: 3
-----
Cash Flow #1
Price = 1051.52
Maturity = 10
Percentage of Face Value that would meet the obligation = 0.951007
Yield to Maturity = 0.0600001
Duration = 7.6655
Duration {to be used in LP_formulation below} = 8.0604
{Note} 7.6655 = 8.0604 X 0.951007
Convexity = 67.9958
Convexity {to be used in LP_formulation below} = 71.4987
{Note} 67.9958 = 71.4987 X 0.951007
-----
Cash Flow #2
Price = 1095.96
Maturity = 15
Percentage of Face Value that would meet the obligation = 0.912445
Yield to Maturity = 0.0599997
Duration = 10
Duration {to be used in LP_formulation below} = 10.9596
{Note} 10 = 10.9596 X 0.912445
Convexity = 121.484
Convexity {to be used in LP_formulation below} = 133.142
{Note} 121.484 = 133.142 X 0.912445
-----
Cash Flow #3
Price = 986.24
Maturity = 30
Percentage of Face Value that would meet the obligation = 1.01396
Yield to Maturity = 0.0599996
Duration = 14.6361
Duration {to be used in LP_formulation below} = 14.4347
{Note} 14.6361 = 14.4347 X 1.01396
Convexity = 296.143
Convexity {to be used in LP_formulation below} = 292.067
{Note} 296.143 = 292.067 X 1.01396
*****
Average YTM{which I use to compute PV of Debt} = 0.0599998
Present value of debt = 1000
*****
Largest Convexity we can get is: 144.404
%Cash Flow:1 0.632508
%Cash Flow:2 0
%Cash Flow:3 0.339581
That is, buy
$665.095 of Cash Flow#1
$334.908 of Cash Flow#3
Press any key to continue . . .

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The result with input 3

3

1051.52 10 67 67 67 67 67 67 67 67 67 1067

1095.96 15 69.88 69.88 69.88 69.88 69.88 69.88 69.88 69.88 69.88 69.88 69.88 69.88 69.88 69.88 69.88
1069.88

986.24 30 59
1059

1790.85 10