```
Enter the length of the rod:4

Please enter the prices for each length(1-10):

1

5

8

9

10

17

17

20

24

39

total length: 4

Top-Down results:
Maximum Revenue:10

Cutting Positions(min):1 1 1 1

cut into 4 parts

compile time(bor-down): 1

Bottom-up results:
Maximum Revenue:10

Cutting Positions(min):2 2

cut into 2 parts

Minimum Revenue:10

Cutting Positions(min):1 1 1 1

cut into 4 parts

compile time(top-down): 1

Bottom-up results:
Maximum Revenue:4

Cutting Positions(min):1 1 1 1

cut into 4 parts

Compile time(bor-down): 0

Cutting Positions(min):1 1 1

cut into 4 parts

Compile time(bor-down): 0

Cutting Positions(min):1 1 1 1

cut into 4 parts

Compile time(bortom-up): 0

Cutting Positions(min):0

Cilvsers/May2MADesktop\ClAlg_HW5\Debug\Alg_HW5.exe (process 18532) exited with code 8.

Co automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.

Press any key to close this window . . .
```

Top-down 跟 Bottom-up 兩個演算法差異很明顯,top down 比較直觀,但需要用到遞迴,同時用一個數列來記錄計算過的子問題防止重複;Bottom-up 則是從最小的子問題開始一個個解決。由此可知 Top-down 的優點是理解實現簡單,而且只計算需要計算的子問題;缺點是需要額外空間 memorize,還有遞迴無法避免的執行時間問題;Bottom-up 的優點為不需要遞迴,且可以更有效的利用空間,不用額外用數列紀錄已計算的數,缺點則是需要計算全部的子問題。

在寫程式時,我發現當長度超過十,兩個演算法都會有迴圈中 i-1 超過 p vector 長度的問題,所以需要在迴圈中額外新增條件,讓 vector 不要超過目錄的長度。