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1.

(a)

For example, the array is: 10, 10, 10, 11, 8, 2.

If we always pick the largest item with the constraint, we will pick: 11, 10, 2, the result is 23, however there is a better solution if we pick 10, 10, 8, whose result is 28.

(b)

For example: 1, 12, 3, -13, 5,

If we only select odd numbered elements,

We will get 12, -13, the result is obviously not optimal.

If we only select even numbered elements,

We will get 1, 3, 5 the result is also not optimal.

For both above example, we need to select a combination of odd and even

numbered elements. For this example, we need to select 12, 5, 12 is the

second number, 5 is the fifth number.

(c)

Dynamic Programming, implement in C++:

int MaxTotalSum(vector<int>& A)

{

vector<int> res(A.size() + 1);

res[A.size()] = 0;

res[A.size() - 1] = A.back();

for(int i = A.size() – 2; i >= 0; i--)

{

res[i] = max(A[i] + res[i + 2], res[i + 1]);

}

return res[0];

}