Jake Tantorski
CMPT435
Bowu Zhang
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Assignment 10

1a.

My Answer: I do believe that the greedy algorithm provides the optimal solution

1b.
Proof

M = 28

G: {1, 5, 10} a = 10 b =5 c = 1

O: a = 2, b = 1, c = 3, in which the total would be 6

O': a' = 2, b' = 1, c' = 3, in which the total would be 6

In this case, a = a'& b = b' & c = c'

The fact that our first solution was exactly the same as the optimal solution, we are able to conclude that the greedy algorithm gives us the optimal solution

2a.

In this algorithm, we want to find where x_i and x_j will be able to cover the M value of a segment. You want to sort through the algorithm in order to find where the best starting point would be considering you start at 0. As we look at the next segments we want to add and see what segment has the largest x_j value that way we use the least amount of segments. Each time we add 1 to the counter to track the number of segments until the segments get to the desired value.

2b.

```
count = 0

pair = x_i;
```

```
for(a_b in x_i to x_j)
        if(a_b > pair && a == x && b > i)
                pair = a_b
        End if
End for
count++
while(pair ! >=  0_10)
        if (a'_b') &&  a' <= pair(a) && b' >= 10
                Count++
        End if
        else
                if(a' <= pair(a) && b' > pair(b))
                        pair = a'_b'
                        Count++
                End if
        End else
End while
```