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Section :- BSCS 4A1
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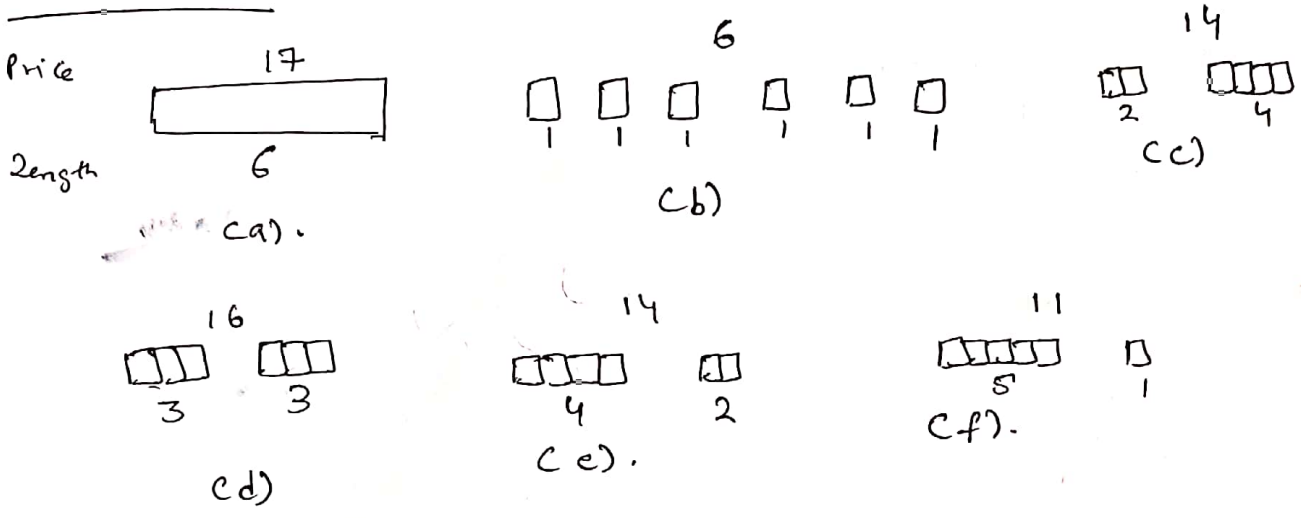
Homework#5 Rod cutting Problem
Total page(s) = 3

TASK#1



TASK#2 Dry Run Dynamic Programming Solution starts here:

- i = 1
  - → K = 1 $v_K + c[i-K] = 1$
    - max = 1
    - c[1] = 1
- i = 2
  - → K = 1 $v_K + c[i-K] = 2$
    - max = 2
  - → K = 2 $v_K + c[i-K] = 5$
    - max = 5
    - c[2] = 5
- i = 3
  - → K = 1 $v_K + c[i-K] = 6$
    - max = 6

continued

- → K = 2 $v_K + c[i-K] = 6$
  - max = 6
- → K = 3 $v_K + c[i-K] = 8$
  - max = 8
  - c[3] = 8
- i = 4
  - → K = 1 $v_K + c[i-K] = 9$
    - max = 9
  - → K = 2 $v_K + c[i-K] = 10$
    - max = 10
  - → K = 3 $v_K + c[i-K] = 9$
    - max = 10
  - → K = 4 $v_K + c[i-K] = 9$
    - max = 10
  - c[4] = 10

- $i = 5$
  - $\rightarrow K = 1$: $v_K + c[i-K] = 11$, $max = 11$
  - $\rightarrow K = 2$: $v_K + c[i-K] = 13$, $max = 13$
  - $\rightarrow K = 3$: $v_K + c[i-K] = 13$, $max = 13$
  - $\rightarrow K = 4$: $v_K + c[i-K] = 10$, $max = 13$
  - $\rightarrow K = 5$: $v_K + c[i-K] = 10$, $max = 13$
- $c[5] = 13$
- $i = 6$
  - $\rightarrow K = 1$: $v_K + c[i-K] = 14$, $max = 14$
  - $\rightarrow K = 2$: $v_K + c[i-K] = 15$, $max = 15$
  - $\rightarrow K = 3$: $v_K + c[i-K] = 16$, $max = 16$
  - $\rightarrow K = 4$: $v_K + c[i-K] = 14$, $max = 16$
  - $\rightarrow K = 5$: $v_K + c[i-K] = 11$, $max = 16$
  - $\rightarrow K = 6$: $v_K + c[i-K] = 17$, $max = 17$
- $c[6] = 17$ ↳ final Answer

SK #3

Q. Where should we cut the rod to get optimal revenue?

```
Rod-Cutting-DP (v, n)
    int j = 0, j2 = 0;  // edited
    int arr[n];
    arr[0] = 0;
{       c[0] = 0

        for i = 1 to n
{           max = -∞

            for K = 1 to i
                if (max < v_K + c[i-K])
{                   max = v_K + c[i-K]
                    j = K;          // edited
                    j2 = arr[i-K]; // edited
}

            c[i] = max;
            arr[i] = j;
}

    // edited
    cout << "For optimal revenue cut from: " << j << " and " << j2 << endl;
}
```