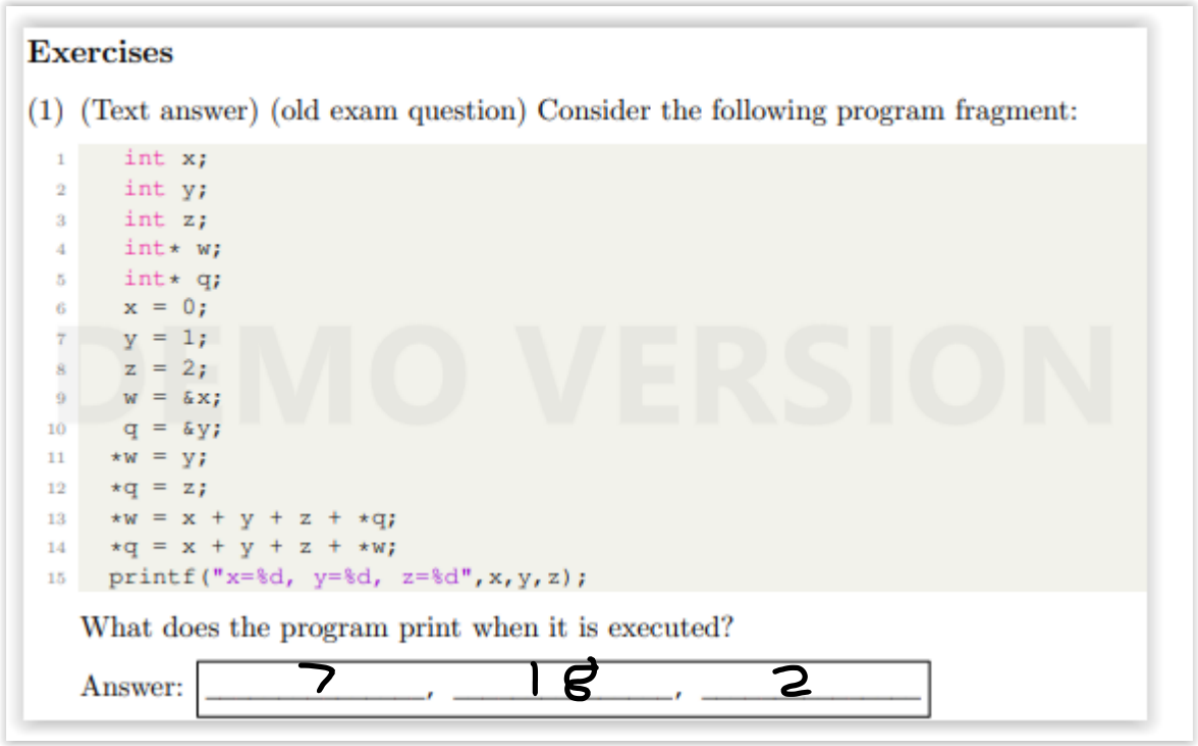
Aflevering - Uge. 6

https://github.com/Aarhus-University-ECE/assignment-6-EN99-bit

Opg. 1:



Exercises

(1) (Text answer) (old exam question) Consider the following program fragment:

```
1   int x;
2   int y;
3   int z;
4   int* w;
5   int* q;
6   x = 0;
7   y = 1;
8   z = 2;
9   w = &x;
10  q = &y;
11 *w = y;
12 *q = z;
13 *w = x + y + z + *q;
14 *q = x + y + z + *w;
15 printf("x=%d, y=%d, z=%d",x,y,z);
```


What does the program print when it is executed?

Answer: 7, 18, 2

Opg. 2:

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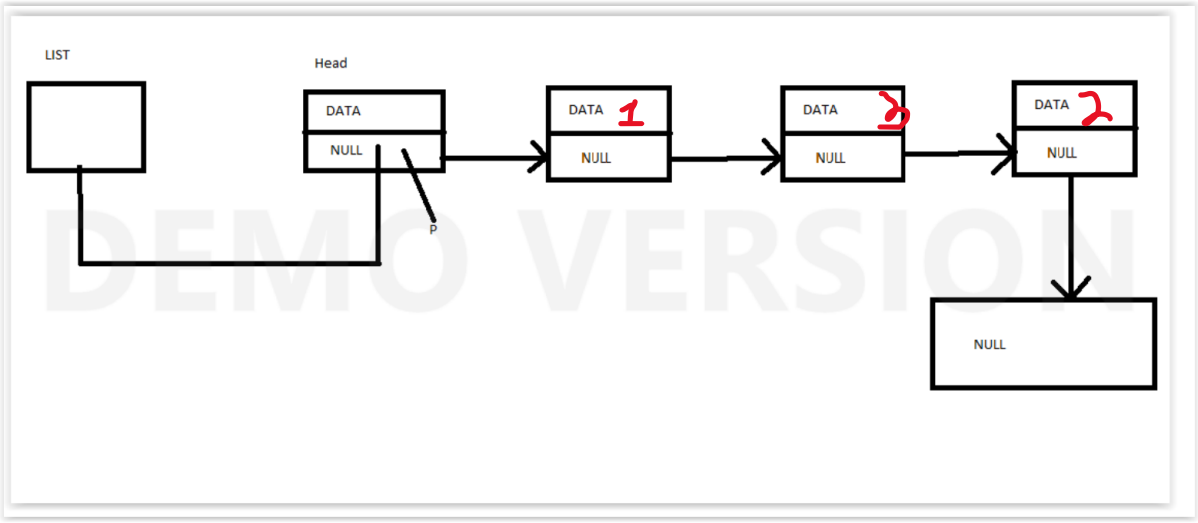
Opg. 3:

(3) (Text and Code answer) Consider the following program:

```
1  #include <stdio.h>  /*printf*/
2  #include <assert.h> /*assert*/
3  #include <stdlib.h> /*malloc*/
4
5  typedef struct node {
6    int data;
7    struct node *next;
8  } node;
9
10 void add(node *head, int x){
11   /*pre: head points to the first, empty element.
12              The last element's next is NULL
13     post: a new node containing x is added to the end of the list*/
14   assert(head!=NULL);
15   node *p = head;
16   while (p->next!=NULL) {
17     p = p->next;
18   } /*p points to the last element*/
19   node *element = malloc(sizeof(node));
20   element->next = NULL;
21   element->data = x;
22   p->next = element;
23 }
24
25 int main(void) {
26   node *list = malloc(sizeof(node));
27   list->next = NULL; /*create first, empty element*/
28   add(list,1);
29   add(list,3);
30   add(list,2);
31  /*show list here*/
32   add(list,2);
33  /*show list here*/
34   return 0;
35 }
```

(a) Draw two diagrams that shows `list` at `/*show list here*/` in `main`. **Note**: The first element is empty and holds no data. I.e. if I have a list with two elements, it has three nodes (the first, empty one and then two nodes holding data). The same definition is used in all functions.

First "Show list here" - line 31:



Second “show list here” - line 33: