Tölvutækni og Forritun Heimadæmi 3

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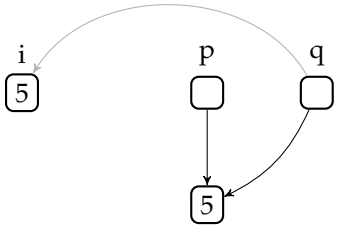
1



Svo `i=5`, `p` og `q` benda á ónefnt minnissvæði sem hefur afritað frá `i` gildið `5`.

2

a.

```c
#include <stdio.h>
#include <stdlib.h>

int main( int argc, char **argv ) {
 int inntala;

 while (scanf("%d", &inntala) != EOF) {
  printf("%d\n", inntala+1);
 }

 return 0;
}
```

```
ragnar@gamer ~/school/tolfor/h3 ◆ cat inn.txt | ./inc
5
9
21
4
13
ragnar@gamer ~/school/tolfor/h3 ◆
```

b.
```
#include <stdio.h>
#include <stdlib.h>

int main( int argc, char **argv ) {
 int inntala;

 while (scanf("%d", &inntala) != EOF) {
  printf("%d\n", inntala + atoi(argv[1]));
 }

 return 0;
}
```

```
ragnar@gamer ~/school/tolfor/h3 ◆ cat inn.txt | ./incx 5
9
13
25
8
17
ragnar@gamer ~/school/tolfor/h3 ◆
```

3

```
int* doubleArr(int* a, int n) {

    /***** Þennan hluta skrifið þið *****/

 int *b = (int *)calloc(n*2, sizeof(int));
 for ( int i = 0; i < n; i++ ) {
  b[i] = a[i];
 }
 free(a);

    /* Skilum hér bendi á upphaflega fylkið til að
       beinagrindin keyri, en gæti þurfa að breyta    */
    return b;
}
```

```
ragnar@gamer ~/school/tolfor/h3 ◆ ./double
n: 20
83
86
77
15
93
35
86
92
49
21
0
0
0
0
0
0
0
0
0
0
```

4

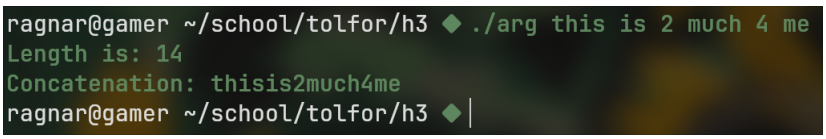
```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>

int main( int argc, char **argv ) {
 int count = 0;
 for ( int i = 1; i < argc; i++ ) {
  count += strlen(argv[i]);
 }

 char *cat = (char *)calloc(count, sizeof(char));

 for ( int i = 1; i < argc; i++ ) {
  strcat(cat, argv[i]);
 }

 printf("Length is: %i\n", count);
 printf("Concatenation: %s\n", cat);
 return 0;
}
```



5

a.
```
void printRevList() {

    /***** Þið skrifið þennan hluta *****/
   struct dNode *p = tail;

   printf("RevListi: ");
   while (p != NULL) {
    printf("%d ", p->data);
    p = p->prev;
   }
   printf("\n");
  }
```

b.
```
void insAs(int k, int v) {
    struct dNode *p, *q;
    int i;

    /* Búa til hnútinn og setja gildið inn í hann */
    p = (struct dNode *)malloc(sizeof(struct dNode));
    p->data = v;

    if (head == NULL) {
        /* Tómur listi */
```

```
        /***** Skrifið kóða hér *****/
    head = p;

    } else if (k == 0) {
        /* innsetning fremst í listann */

        /***** Skrifið kóða hér *****/
    p->next = head;
    head->prev = p;
    head = p;

    } else {
        /* annars rekja okkur eftir listanum */


        /***** Skrifið kóða hér *****/
        /* Athugið að hér gæti þurft að uppfæra tail-bendinn */

    int end = 0;
    q = head;
    for ( int i = 0; i < k; i++ ) {
     p->prev = q;
     if ( q->next == NULL ) {
      tail = p;
      end = 1;
      break;
     } else {
      q = q->next;
     }
    }
    (p->prev)->next = p;
    if ( !end ) {
     p->next = q;
     q->prev = p;
    }
     }
}
```

```
ragnar@gamer ~/school/tolfor/h3 ◆ ./dllist
Listi: 83 86 77 15 93
RevListi: 93 15 77 86 83

Setja 10 sem stak 0:
Listi: 10 83 86 77 15 93
Setja 20 sem stak 10:
Listi: 10 83 86 77 15 93 20
Setja 30 sem stak 3:
Listi: 10 83 86 30 77 15 93 20
ragnar@gamer ~/school/tolfor/h3 ◆
```