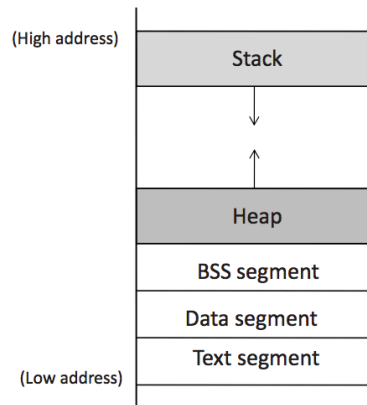


## Exercise: Memory Layout for a C Program

The following figure shows the memory layout of a C program with five segments – *text*, *data*, *BSS*, *heap*, and *stack*.



Which segments, as shown in the figure above, in the memory layout for the following C program store the values of *x*, *y*, *z*, *a*, *b*, *c*, *p*, *q*, *p*[0], and *p*[1]?

```
int x = 100;
int y;
static int z;

int main() {
    int a = 2;
    int b = 4;
    static int c = 6;

    int *p, *q;
    p = (int *) malloc(2 * sizeof(int));
    p[0] = 10;
    p[1] = 20;
    q = p;

    free(p);
    p = NULL;
    q = NULL;

    return 0;
}
```

**Data segment:** *x*, *c*

**BSS segment:** *y*, *z*

**Stack segment:** *a*, *b*, *p*, *q*

**Heap segment:** *p*[0], *p*[1]