

```
1 //
2 // Created by hengxin on 10/23/21.
3 //
4
5 #include <stdio.h>
6
7 int main() {
8     int number = 0;
9     scanf("%d", &number);
10
11     int num_of_digits = 0;
12
13     /**
14      * "while"-version
15      */
16     // if (number == 0) {
17     //     num_of_digits = 1;
18     // } else {
19     //     while (number > 0) {
20     //         number /= 10;
21     //         num_of_digits++;
22     //     }
23     // }
24
25     /**
26      * "do-while" version
27      */
28     do {
29         number /= 10;
30         num_of_digits++;
31     } while (number > 0);
32
33     printf("Number of digits is %d.\n", num_of_digits);
34
35     return 0;
36 }
37
```

```
1 //
2 // Created by hengxin on 10/23/21.
3 //
4
5 #include <stdio.h>
6
7 #define LEN 10
8 int dictionary[LEN] = {1, 1, 2, 3, 5, 8, 13, 21, 34, 55};
9
10 int main() {
11     int key = 0;
12     scanf("%d", &key);
13
14     int index = -1;
15     int low = 0;
16     int high = LEN - 1;
17     int mid = 0;
18     while (low <= high) {
19         mid = (low + high) / 2;
20         if (key < dictionary[mid]) {
21             high = mid - 1;
22         } else if (key > dictionary[mid]) {
23             low = mid + 1;
24         } else {
25             index = mid;
26             break;
27         }
28     }
29
30     if (index == -1) {
31         printf("Not found!\n");
32     } else {
33         printf("The index of %d is %d.\n", key, index);
34     }
35
36     return 0;
37 }
38
```

```
1 //
2 // Created by hengxin on 10/23/21.
3 //
4
5 #include <stdio.h>
6
7 int main() {
8     int max = 0;
9     scanf("%d", &max);
10
11     for (int number = 2; number <= max; number++) {
12         int is_prime = 1;
13         for (int i = 2; i < number; i++) {
14             if (number % i == 0) {
15                 is_prime = 0;
16                 break;
17             }
18         }
19
20         if (is_prime) {
21             printf("%d ", number);
22         }
23     }
24
25     return 0;
26 }
```

```
1 //
2 // Created by hengxin on 10/23/21.
3 //
4
5 #include <stdio.h>
6
7 #define LEN 21
8 char string[LEN] = "";
9
10 int main() {
11     scanf("%20s", string);
12
13     int len = 0;
14     while (string[len] != '\0') {
15         len++;
16     }
17     printf("The length of \"%s\" is %d.\n", string, len);
18
19     int is_parlindrome = 1;
20     for (int i = 0, j = len - 1; i < j; i++, j--) {
21         if (string[i] != string[j]) {
22             is_parlindrome = 0;
23             break;
24         }
25     }
26
27     printf("\"%s\" is %s a parlindrome.\n", string,
        is_parlindrome ? "" : "not");
28
29     return 0;
30 }
31
32
```

```
1 //
2 // Created by hengxin on 10/16/21.
3 //
4
5 #include <stdio.h>
6
7 #define LEN 20
8 int numbers[LEN] = {0};
9
10 int main() {
11     /**
12      * Input the array
13      * Note: fails to run this program in "Run" (Ctrl + D)
14      * See: https://youtrack.jetbrains.com/issue/CPP-5704
15      * Use "Terminal" instead.
16      */
17     int len = -1;
18     while (scanf("%d", &numbers[++len]) != EOF);
19
20     /**
21      * PrintStrs it out
22      */
23     for (int i = 0; i < len; i++) {
24         printf("%d ", numbers[i]);
25     }
26     printf("\n");
27
28     printf("-----\n");
29     for (int i = 0; i < len; ++i) {
30         int min = numbers[i];
31         int min_index = i;
32
33         for (int j = i + 1; j < len; j++) {
34             if (min > numbers[j]) {
35                 min = numbers[j];
36                 min_index = j;
37             }
38         }
39
40         printf("min = %d \t min_index = %d\n", min, min_index);
41     }
42     /**
43      * swap numbers[i] and numbers[min_index]
```

```
44     */
45     int tmp = numbers[i];
46     numbers[i] = numbers[min_index];
47     numbers[min_index] = tmp;
48
49     /**
50     * PrintStrs it out again
51     */
52     for (int i = 0; i < len; i++) {
53         printf("%d ", numbers[i]);
54     }
55     printf("\n");
56     printf("-----\n");
57 }
58
59 return 0;
60 }
```

```
1 //
2 // Created by hengxin on 10/16/21.
3 //
4
5 #include <stdio.h>
6
7 int main() {
8     int lines;
9     scanf("%d", &lines);
10
11     for (int i = 0; i < lines; i++) {
12         // print lines - (i + 1) spaces
13         for (int j = 0; j < lines - (i + 1); j++) {
14             printf(" ");
15         }
16
17         // print 2 (i + 1) stars
18         for (int j = 0; j < 2 * i + 1; j++) {
19             printf("*");
20         }
21
22         // print lines - (i + 1) spaces
23         for (int j = 0; j < lines - (i + 1); j++) {
24             printf(" ");
25         }
26
27         if (i < lines - 1) {
28             printf("\n");
29         }
30     }
31
32     return 0;
33 }
34
```