```c
//
// Created by hengxin on 10/23/21.
//

#include <stdio.h>

int main() {
  int number = 0;
  scanf("%d", &number);

  int num_of_digits = 0;

  /**
   * "while"-version
   */
//  if (number == 0) {
//    num_of_digits = 1;
//  } else {
//    while (number > 0) {
//      number /= 10;
//      num_of_digits++;
//    }
//  }

  /**
   * "do-while" version
   */
  do {
    number /= 10;
    num_of_digits++;
  } while (number > 0);

  printf("Number of digits is %d.\n", num_of_digits);

  return 0;
}

```

```c
//
// Created by hengxin on 10/23/21.
//

#include <stdio.h>

#define LEN 10
int dictionary[LEN] = {1, 1, 2, 3, 5, 8, 13, 21, 34, 55};

int main() {
  int key = 0;
  scanf("%d", &key);

  int index = -1;
  int low = 0;
  int high = LEN - 1;
  int mid = 0;
  while (low <= high) {
    mid = (low + high) / 2;
    if (key < dictionary[mid]) {
      high = mid - 1;
    } else if (key > dictionary[mid]) {
      low = mid + 1;
    } else {
      index = mid;
      break;
    }
  }

  if (index == -1) {
    printf("Not found!\n");
  } else {
    printf("The index of %d is %d.\n", key, index);
  }

  return 0;
}

```

```c
//
// Created by hengxin on 10/23/21.
//

#include <stdio.h>

int main() {
  int max = 0;
  scanf("%d", &max);

  for (int number = 2; number <= max; number++) {
    int is_prime = 1;
    for (int i = 2; i < number; i++) {
      if (number % i == 0) {
        is_prime = 0;
        break;
      }
    }

    if (is_prime) {
      printf("%d ", number);
    }
  }

  return 0;
}
```

```c
//
// Created by hengxin on 10/23/21.
//

#include <stdio.h>

#define LEN 21
char string[LEN] = "";

int main() {
  scanf("%20s", string);

  int len = 0;
  while (string[len] != '\0') {
    len++;
  }
  printf("The length of \"%s\" is %d.\n", string, len);

  int is_parlindrome = 1;
  for (int i = 0, j = len - 1; i < j; i++, j--) {
    if (string[i] != string[j]) {
      is_parlindrome = 0;
      break;
    }
  }

  printf("\"%s\" is %s a parlindrome.\n", string,
  is_parlindrome ? "" : "not");

  return 0;
}


```

```c
//
// Created by hengxin on 10/16/21.
//

#include <stdio.h>

#define LEN 20
int numbers[LEN] = {0};

int main() {
  /**
   * Input the array
   * Note: fails to run this program in "Run" (Ctrl + D)
   * See: https://youtrack.jetbrains.com/issue/CPP-5704
   * Use "Terminal" instead.
   */
  int len = -1;
  while (scanf("%d", &numbers[++len]) != EOF);

  /**
   * PrintStrs it out
   */
  for (int i = 0; i < len; i++) {
    printf("%d ", numbers[i]);
  }
  printf("\n");

  printf("--------------------\n");
  for (int i = 0; i < len; ++i) {
    int min = numbers[i];
    int min_index = i;

    for (int j = i + 1; j < len; j++) {
      if (min > numbers[j]) {
        min = numbers[j];
        min_index = j;
      }
    }

    printf("min = %d \t min_index = %d\n", min, min_index
);

    /**
     * swap numbers[i] and numbers[min_index]
```

```c
     */
    int tmp = numbers[i];
    numbers[i] = numbers[min_index];
    numbers[min_index] = tmp;

    /**
     * PrintStrs it out again
     */
    for (int i = 0; i < len; i++) {
      printf("%d ", numbers[i]);
    }
    printf("\n");
    printf("--------------------\n");
  }

  return 0;
}
```

```c
//
// Created by hengxin on 10/16/21.
//

#include <stdio.h>

int main() {
  int lines;
  scanf("%d", &lines);

  for (int i = 0; i < lines; i++) {
    // print lines - (i + 1) spaces
    for (int j = 0; j < lines - (i + 1); j++) {
      printf(" ");
    }

    // print 2 (i + 1) stars
    for (int j = 0; j < 2 * i + 1; j++) {
      printf("*");
    }

    // print lines - (i + 1) spaces
    for (int j = 0; j < lines - (i + 1); j++) {
      printf(" ");
    }

    if (i < lines - 1) {
      printf("\n");
    }
  }

  return 0;
}

```