

CS50 Questions (SET-K)

[Time: 4Hrs]

[Marks: 60]

1. Answer to this paper must be saved in folder in the GitHub repository.
2. Save the answers to the short questions in the ShortAns.txt file in your respective Exams/Section1 folder. All questions are compulsory in Section 1.
3. The answers of Section 2 and 3 are to be stored to the predefined ".c" files. For example the answer to the first question of Section 2 is to be stored in Exams/Section2/2a.c . Similarly second answer of Section 3 is to be stored in Exams/Section3/3b.c.
4. The above long questions are to be done in cs50.dev ide or the ide of your choice. And the answers are to be copied and pasted to the above mention ".c" files.
5. Attempt any four questions from Section2 and any two questions from Section 3.
6. The code submitted must get compiled without errors, otherwise the answer will be disregarded.
7. There will be marks for correct steps. But, the answer will be disregarded if there are more than 4 and 6 mistakes in Section 2 and Section 3 respectively.

SECTION - I (10 Marks)

Attempt all questions from this section.

- A. What is a computer bug?
- B. Is 'C' a compiled language or interpreted language?
- C. Which of the following is not a datatype?
 - a) Bool
 - b) float
 - c) char
 - d) string
- D. Multiple Choice: In C, the printf function is used for:
 - a) Declaring variables
 - b) Reading user input
 - c) Printing formatted output to the console
 - d) Performing complex calculations
- E. While(____). What can be put in the blank space to create an infinite loop?
- F. What is the usage of 'continue' keyword ?

CS50 Questions (SET-K)

- G. What is the '\0' character?
- H. What does $O(1)$ time complexity mean?
- I. For sorted arrays, which sorting algorithm is more efficient?
- a) Bubble sort
 - b) Selection sort
 - c) Merge sort
 - d) None of the above
- J. Which of the following is not a built in 'C' library?
- a) `stdio.h`
 - b) `string.h`
 - c) `cs50.h`
 - d) None of the above

SECTION - II (20 Marks)

Attempt any four questions from this section.

- A. In 2a.c, complete `average_marks(int arr[n])`, such that the program prints the average marks of boys or average marks of girls, depending upon the given array. The array stores the marks of the boys in even indexes (0, 2, 4, ...) and marks of the girls in odd indexes (1, 3, 5, ...). The last element of the array determines if the calculated average should be of boys or girls, i.e if the last digit is 0, calculate the average marks of boys, anything except 0 indicates that the girls' average marks is to be calculated.
- B. In 2b.c, complete `find_element(int arr[n], int num)`, such that the program prints "YES", if the given number `num` is in `arr[n]`, otherwise prints "NO". The array will always be of size 8.
- C. In 2c.c, complete `desc_arr(int arr[n])`. Given an unsorted array, write a program in c which modifies the given array such that the resulting array is in descending order. The length of the arrays will always be 5.
- a. Example:

| | | | |
|---|---|---|---|
| 2 | 3 | 4 | 1 |
|---|---|---|---|

 \longrightarrow

| | | | |
|---|---|---|---|
| 4 | 3 | 2 | 1 |
|---|---|---|---|
- D. In 2d.c, complete the function `reverse_case(string s)`, which reads one argument and changes the cases of each character in 's'. The characters will always be letters.
- a. Example: 1) Apple -> aPPLE, 2) hoUR -> HOur
- E. In 2e.c, complete the function `max_of_six(int a, int b, int c, int d, int e, int f)` which reads six arguments and returns the greatest of them.
- F. In 2f.c, write a program that uses recursion correctly.

CS50 Questions (SET-K)

SECTION – III (30 Marks)

Attempt any two questions from this section.

[Problem 1](#)

[Problem 2](#)

[Problem 3](#)