

Syllabus for preparing MCQs based exam

For lab, probably there will be a take home exam with 2-3 programming challenges. Nothing has been finalized yet but hopefully things will get finalized soon.

1. Designing algorithms and their trace tables

- a. Find how many times a specific code statement will execute

2. Escape sequence

- a. Finding output of a given code with escape sequence

3. Formatting output & Data types

- a. Setw, setfill, setprecision, setf
 - i. Find the output of given code/ fill in the incomplete code with the appropriate option given in MCQs' options.

e.g. Which statement will padd 6 zeros at the start of the string? (using setFill func)..

- b. sizeof operator
 - i. Finding size using sizeof operator
- c. Conceptual question about ostream buffer

4. Operators

- a. Finding output of a given code with postfix and prefix operator
- b. Find the order/sequence number at which a sub-expression in a given expression is evaluated (decide with regard to precedence rules). Precedence table will be provided so no need to memorize the precedence.

5. Switch statement, Nested if, loops

- a. Find the output of a given code
 - i. (practice what if we don't use brackets in if statements/what if we skip break in any switch case)
 - ii. For loop break/continue
 - iii. What will be the value of loop variables (i,j or k) in nth iteration? (A code can be given that prints a pattern). Similar sort of questions can be asked make sure you have a clear idea of how nested loops run!

6. Typecasting (implicit/explicit)

- a. Find the output/ complete the incomplete code statement
- b. Find which of the following typecasting is allowed. (options might be given in MCQs form)

7. Arrays (one dimensional vs multi-dimensional)

- a. Given a code, you might be asked to tell what will be the value at a particular index once you run the code.
- b. Tell which of the given initializations are correct/incorrect.
- c. How postfix/prefix works with arrays (either you will be asked to fill the incomplete code if we want the output in a specific way OR you will be asked about the output of a program/status of an array at a particular iteration.)

8. Char array vs strings

- a. Conceptual question
- b. Default terminating character for getline and cin>>
- c. Find whether a given code is correct or not
- d. Find the contents of a char array at a particular line of code
- e. Where should we insert cin.ignore statement (at which line number) to get required output?
- f. + operator in strings
- g. Tell how many characters will be consumed by the given character constants?

9. Functions

- a. Find the output of the given code
- b. Find the error in the given code
- c. What will be the output of the code if we pass the arguments as a reference instead of pass by value?
- d. Which of the given function prototypes/function calls are valid?
- e. How many times a function will be called and what will be the value of variables x,y,z in after third call?
- f. Where should we insert a func call to get the required output?
- g. Which of the following is a valid function overloading?

10. Scope of variables, static variables

- a. Tell the scope of variable
- b. Shadowing (find the contents of a program at line no.x)
- c. What is the output of the following code (with static variables)

11. Array and functions

- a. What will be the function call if we want to pass 1D/2D array to it?
- b. What will be the contents of an array when the function is called third time?

12. Pointers

- a. Find contents of a pointer at a particular line number of iteration of loop
- b. Valid declaration
- c. Pointer to a pointer..Write a statement that points certain memory location to memory x using single or multiple indirections
- d. Tell which of the following is a valid assignment (LHS matches RHS)
- e. Trace the output of the code with pointers and loops and functions
- f. Write a statement to change the content of certain memory location with pointer x.
- g. Write a statement that increments a pointer address/value (you must have a grip on how single and multiple indirections and dereferencing works)
- h. Array of pointers (content of array at iteration number 5 e.g.)
- i. Array vs pointer notation
- j. Postfix and prefix increment with pointers

13. Dynamic memory allocation

- a. conceptual question about static and dynamic memory allocation
- b. allocating and deallocating memory (find error or complete a code)
- c. How to pass a pointer to a function?
- d. Pass by reference vs pass by pointer (conceptual question)
- e. 2D dynamic array (valid vs invalid declaration)

- f. Given a picture of memory (linear memory addresses), tell the address of 4th element of a 1D/2D array

14. Stream input/output, Introduction to file handling, open a file for I/O, file modes

- a. What will be the contents of a file after running a given code? (file modes)
- b. What will be the statement to read a specific format line from the file?
- c. What will be the contents of a certain variable after we read from file ?
- d. Output of a given code
- e. File pointers (seekg tellg etc)
 - i. Tell the output/ complete the code

****Stringstream is not included**

15. Structs

- a. Define struct and array of struct (valid/invalid declaration/calling)
- b. Write a code statement/ tell the output (access member of a struct)