C PROGRAMMING 2020 SOLVE PAST PAPER

define preprocessor directives? in 2 lines easy

Preprocessor directives in C are instructions that are processed by the preprocessor before the compilation of the program, enabling conditional compilation, file inclusion, and macro expansion to modify the source code.

what kind of language does wchar_t handle

The wchar_t type is an implementation-defined wide character type

The `wchar_t` data type in C handles wide characters, which are used to represent characters beyond the ASCII character set, including characters from various languages, symbols, and emojis.

in how many ways we can specify a cost qualifier?

In C, there are four ways to specify a storage class qualifier:

1. **`auto`:** This is the default storage class for local variables. It is rarely explicitly specified in modern C code.

2**. `register`:** It suggests that a variable should be stored in a register for faster access. However, the use of this qualifier is mostly ignored by modern compilers, as they are efficient in optimizing register usage automatically.

3. **`static`**: It is used to declare a variable with static storage duration. The variable retains its value between function calls, and it is initialized only once.

4. **`extern`:** It is used to declare a variable that is defined in a separate file or scope. It allows access to the variable across different source files.

what are conditional loop ? Give example

Conditional loops, also known as "while loops" or "do-while loops," are loop structures that repeatedly execute a block of code as long as a specified condition is true. The condition is evaluated before each iteration, and if it remains true, the loop continues. Once the condition becomes false, the loop terminates, and the program execution continues with the next statement.

define the purpose of break in switch statement? in 2 lines

The purpose of the `break` statement in a `switch` statement is to terminate the execution of the `switch` block and exit the `switch` statement, preventing the subsequent cases from being evaluated or executed.

define structures?

In C, structures are user-defined data types that allow you to combine different data types into a single entity. Structures provide a way to group related variables under one name, making it easier to organize and manipulate data. They are used to create complex data structures that can hold multiple pieces of data with different types.

diff between local and global variable

The main difference between local and global variables is their scope:

1. Local Variables:
   - Local variables are declared within a specific block, such as a function or a loop.
   - They have local scope and are only accessible within the block in which they are declared.
   - Local variables are typically used for temporary or intermediate data within a specific block of code.
   - Each time the block is executed, a new instance of the local variable is created.

2. Global Variables:
   - Global variables are declared outside of any specific block, usually at the top of the program.
   - They have global scope and can be accessed from any part of the program, including different functions.
   - Global variables are available throughout the entire program's execution.
   - They are often used for data that needs to be shared and accessed by multiple functions or modules.

in what kind of data structures similiar data types elements can be combined?

In C, similar data type elements can be combined using arrays and structures.

1. Arrays: Arrays are used to store a collection of elements of the same data type in contiguous memory locations. Elements in an array can be accessed using their indices. Arrays provide a way to store and manipulate multiple values of the same type.

2. Structures: Structures (struct) allow combining multiple elements of different data types into a single entity. A structure can have various data types, such as integers, floats, characters, and even other structures. Each element within a structure is accessed using a member (variable) name.

how we can avoid buffer overflow while dealing with strings?

1. Use functions that automatically handle buffer bounds:
   - Instead of using unsafe functions like `gets()` or `scanf()` for string input, use safer alternatives like `fgets()` or `scanf()` with field width specifier to limit the number of characters read.
2. Always ensure proper buffer size:
3. Limit string length during input:
   - Validate and restrict the input length to match the buffer size.
4. Null-terminate the string:
5. Use secure string functions:

can we pass the array to function by value

No, in C, arrays cannot be passed by value to a function. When an array is passed as a function argument, it decays into a pointer to its first element, and any modifications made to the array within the function will affect the original array in the calling code.

what is escape sequence

An escape sequence in C is a combination of characters that begins with a backslash (`\`) and is used to represent certain special characters or control sequences, such as newline (`\n`), tab (`\t`), or backslash itself (`\\`). Escape sequences are used to insert non-printable characters or to perform specific actions within strings or character literals.

examples of ternary operator?

Here are a few examples of the ternary operator (`?:`) in C:

1. Assigning the minimum of two numbers:
int min = (a < b) ? a : b;

2. Checking if a number is positive or negative:
char sign = (num >= 0) ? '+' : '-';

3. Finding the absolute value of a number:
int absValue = (num < 0) ? -num : num;

4. Checking if a number is even or odd:
char parity = (num % 2 == 0) ? 'Even' : 'Odd';

Define:
The ternary operator is a concise way to express conditional statements in a single line. It consists of a condition followed by a question mark (`?`), then an expression to evaluate if the condition is true, followed by a colon (`:`), and finally, an expression to evaluate if the condition is false.