Ellipsis in C

Course: Introduction to Programming and Data Structures

Dr. Laltu Sardar

Institute for Advancing Intelligence (IAI), TCG Centres for Research and Education in Science and Technology (TCG Crest)





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Ellipsis in C



What is Ellipsis in C?

- An ellipsis ('...') in C allows functions to accept a variable number of arguments.
- Commonly used in functions like printf() and scanf().
- Enables flexibility in handling different argument types.



Syntax

Syntax of Ellipsis in C

- Declaration of a function with ellipsis:
- int myFunction(int count, ...);
- The first argument is usually used to indicate the number of additional arguments or types.



Example: Using Ellipsis in a Function

```
#include <stdarg.h>
 #include <stdio.h>
  void printNumbers(int n, ...) {
      va_list args;
5
      va_start(args, n);
6
      for (int i = 0; i < n; i++) {</pre>
           int value = va_arg(args, int);
8
          printf("%d\n", value);
      va_end(args);
12 }
14 int main() \{
      printNumbers(3, 10, 20, 30); // Pass 3 arguments
      return 0;
```

Explanation of Code

- va_list: Variable to store the list of arguments.
- va_start(): Initializes the argument list.
- va_arg(): Retrieves the next argument.
- va_end(): Cleans up the argument list.



Common Uses of Ellipsis

- Standard library functions like:
 - printf() for formatted output.
 - scanf() for formatted input.
- Handling functions that can accept varying numbers of arguments.



Limitations of Ellipsis

- No type safety for arguments passed in ellipsis.
- Risk of accessing wrong types of arguments.
- Caller is responsible for providing the right argument types.



Differences Between Ellipsis and Command Line Arguments

Ellipsis:

- Used within functions to handle variable number of arguments.
- Arguments are specified directly in the function call.
- Requires 'stdarg.h' library.

■ Command Line Arguments:

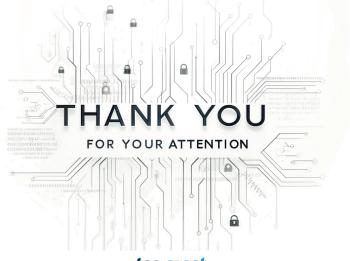
- Used to pass arguments to the program from the command line.
- Arguments are passed when the program is executed.
- Automatically available in 'argc' and 'argv' in the 'main' function.



Conclusion

- Ellipsis and command-line arguments serve different purposes in C.
- Ellipsis is useful for handling a variable number of arguments in a function.
- Command-line arguments allow external input to a program.





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Dr. Laltu Sardar laltu.sardar@tcgcrest.org https://laltu-sardar.github.io.