# Constants and Macros

1. Write a function macro to find the smallest number in an array of integers

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1. What are the differences between macros and constant. Can you replace a constant with a macro and vice versa? Give examples for your statements

A: **Macros**:

* + Macros are preprocessor directives that perform textual substitution.
  + They are not type-checked, and their values are replaced directly in the code.
  + Macros are evaluated at compile-time, and they don’t consume memory.
  + Macros can take parameters (like function-like macros) and are often used for reusable code snippets.

**Constants**:

* + Constants are variables whose value cannot be changed after initialization.
  + Constants are type-checked, and they consume memory because they are treated like variables.
  + Constants are evaluated at runtime.

**Replacing Constants with Macros**:

Yes, you can replace a constant with a macro, but macros will not have type safety and can lead to unexpected behavior in some cases (like operator precedence issues).

#define PI 3.14159

**Replacing Macros with Constants**:

Macros can often be replaced with const variables in modern C to improve type safety and readability.

const double PI = 3.14159;

1. Refer macro below

#define MYPROD(x) (x \*x)

WAP to invoke the above macro with inputs as below and display the result.

* 1. MYPROD(2+1)
  2. MYPROD(6+1)

Do you get the expected answers as 9 and 49 in case a. and case b.?

If not modify the code to produce the expected results. in above case

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1. Write macro definitions with arguments for calculation of area of a triangle and circle.
   1. Use macros for both constants as well as formula evaluations.
   2. Store these macro definitions in a header file and invoke the macros from the main function.

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1. Define a macro name MYPRINT as below.

#define MYPRINT(x) printf(x)

Use the above macro conditionally only if a macro CUST\_PRINT is defined , otherwise not to be used.

For eg refer the code and comments below.

int main()

{

MYPRINT("Hello World"); // will be displayed only when CUST\_PRINT is defined

printf("Test"); // will be displayed always irrepective of CUST\_PRINT

return 0;

}

Add the code to demonstrate the above behaviour.

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1. Identify and use the macros to display
   1. file name
   2. function name
   3. line of code

Show the usage with a code example

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