# Constants and Macros Assignment

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

A black background with white text

Description automatically generated

A computer screen shot of a program

Description automatically generated

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

* **Use macros** when you need simple text replacement, preprocessor code, or constants that do not require type checking.
* **Use constants** when you need type safety, debugging capability, and memory allocation for a variable-like behavior. Constants are preferred in most cases for better maintainability and readability.

**Replacing a constant with a macro**:

* You can replace a constant with a macro if you simply want a value, but if you need a specific data type or want type safety, you should use a constant instead.

**Ex:** #define PI 3.14159

**Replacing a macro with a constant:**

* You can replace a simple macro that represents a constant value with a constant declaration for type safety. But if the macro contains logic (like functions), you cannot directly replace it with a constant.

Ex:

#define MAX 100

int MAX = 100;

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

A computer screen shot of text

Description automatically generated

A black screen with white text

Description automatically generated

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.

A screenshot of a computer code

Description automatically generated A computer screen with text on it

Description automatically generated

A screen shot of a computer

Description automatically generated

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.

A screen shot of a computer code

Description automatically generated

A black background with white text

Description automatically generated

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

* **\_\_FILE\_\_**: Displays the source file name.
* **\_\_FUNCTION\_\_**: Displays the function name.
* **\_\_LINE\_\_**: Displays the line number.

A screenshot of a computer code

Description automatically generated

A computer screen shot of text

Description automatically generated