**PSG COLLEGE OF TECHNOLOGY, COIMBATORE – 641 004**

**DEPARTMENT OF APPLIED MATHEMATICS AND COMPUTATIONAL SCIENCES**

**I M.Sc SS (28.6.19) / TCS(27.06.19) - C Programming Lab**

Write a program to print the memory size, minimum and maximum value of all data types in C.

**Macro Constants defined in limits.h**

|  |  |
| --- | --- |
| **Macro** | **Description** |
| CHAR\_BIT | Defines the number of bits in a byte. |
| SCHAR\_MIN | Defines the minimum value for a signed char. |
| SCHAR\_MAX | Defines the maximum value for a signed char. |
| UCHAR\_MAX | Defines the maximum value for an unsigned char. |
| CHAR\_MIN | Defines the minimum value for type char and its value will be equal to SCHAR\_MIN if char represents negative values, otherwise zero. |
| CHAR\_MAX | Defines the value for type char and its value will be equal to SCHAR\_MAX if char represents negative values, otherwise UCHAR\_MAX. |
| MB\_LEN\_MAX | Defines the maximum number of bytes in a multi-byte character. |
| SHRT\_MIN | Defines the minimum value for a short int. |
| SHRT\_MAX | Defines the maximum value for a short int. |
| USHRT\_MAX | Defines the maximum value for an unsigned short int. |
| INT\_MIN | Defines the minimum value for an int. |
| INT\_MAX | Defines the maximum value for an int. |
| UINT\_MAX | Defines the maximum value for an unsigned int. |
| LONG\_MIN | Defines the minimum value for a long int. |
| LONG\_MAX | Defines the maximum value for a long int. |
| ULONG\_MAX | Defines the maximum value for an unsigned long int. |
| LLONG\_MIN | Minimum value for a long long int |
| LLONG\_MAX | Maximum value for a long long int |
| ULLONG\_MAX | Maximum value for a unsigned long long int |

2. Write a program to read, print and arithmetic calculations using octal, hexadecimal numbers.

**Format specifiers in C**

| **Format specifier** | **Description** | **Supported data types** |
| --- | --- | --- |
| %c | Character | char unsigned char |
| %d | Signed Integer | short unsigned short int long |
| %e or %E | Scientific notation of float values | float double |
| %f | Floating point | float |
| %g or %G | Similar as %e or %E | float double |
| %hi | Signed Integer(Short) | short |
| %hu | Unsigned Integer(Short) | unsigned short |
| %i | Signed Integer | short unsigned short int long |
| %l or %ld or %li | Signed Integer | long |
| %lf | Floating point | double |
| %Lf | Floating point | long double |
| %lu | Unsigned integer | unsigned int unsigned long |
| %lli, %lld | Signed Integer | long long |
| %llu | Unsigned Integer | unsigned long long |
| %o | Octal representation of Integer. | short unsigned short int unsigned int long |
| %p | Address of pointer to void void \* | void \* |
| %s | String | char \* |
| %u | Unsigned Integer | unsigned int unsigned long |
| %x or %X | Hexadecimal representation of Unsigned Integer | short unsigned short int unsigned int long |
| %n | Prints nothing |  |
| %% | Prints % character |  |