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| **Ex No: 10** | Number Conversion |

**AIM**

Convert the given decimal number into binary, octal and hexadecimal numbers using user defined functions.

**PRE-LAB QUESTIONS**

1. What are the benefits of functions?
2. Compare actual parameters and formal parameters
3. Differentiate between pass by value and pass by reference.
4. Differentiate between library function and user defined function
5. What is function prototyping? Why it is necessary

**ALGORITHM**

**Step 1:** Start  
**Step 2:**  get decimal, base and buffer(b)  
**Step 3:** Let index(i) point to first element (0)  
**Step 4:** while (decimal > 0):  
 **Step 4.1:** b[i] = get\_digit**(**decimal **%** base**)  
 Step 4.2:**  decimal = decimal / base **Step 4.3:**  increment index (i) by 1

**Step 5:**  Reverse the content in b and print   
**Step 6:** End

**get\_digit(int d)**

**Step 1:** if d is between 10-15, return ‘A’-‘F’   
**Step 2:** Else, return d

**PROGRAM**

#include "stdio.h"

#include "string.h"

void strrev**(**char**\*** S**){**

int right **=** strlen**(**S**)-**1**;**

int left **=** 0**;**

char t**;**

**while(**left **<** right**){**

t **=** S**[**left**];**

S**[**left**++]** **=** S**[**right**];**

S**[**right**--]** **=** t**;**

**}**

printf**(**"\n"**);**

**}**

char get\_digit**(**int d**){**

**switch(**d**){**

**case** 10**:** **return** 'A'**;**

**case** 11**:** **return** 'B'**;**

**case** 12**:** **return** 'C'**;**

**case** 13**:** **return** 'D'**;**

**case** 14**:** **return** 'E'**;**

**case** 15**:** **return** 'F'**;**

**default:** **return** d **+** '0'**;**

**}**

**}**

void conv**(**int decimal**,** int base**,** char b**[]){**

int i **=** 0**;**

**if(**base **!=** 2 **&&** base **!=** 8 **&&** base **!=** 16**)**

**{**strcpy**(**b**,**"NA"**);** **return;}**

**while(**decimal **>** 0**){**

b**[**i**]** **=** get\_digit**(**decimal **%** base**);**

decimal **/=** base**;**

i**++;**

**}**

strrev**(**b**);**

**}**

int main**(**void**)** **{**

int decimal**;**

char bin**[**20**],** oct**[**20**],** hex**[**20**];**

scanf**(**"%d"**,** **&**decimal**);**

conv**(**decimal**,** 2**,** bin**);**

printf**(**"binary = %s\n"**,** bin**);**

conv**(**decimal**,** 8**,** oct**);**

printf**(**"octal = %s\n"**,** oct **);**

conv**(**decimal**,** 16**,** hex**);**

printf**(**"hex = %s\n"**,** hex**);**

**return** 0**;**

**}**

**INPUT**

128

**OUTPUT**

binary = 10000000

octal = 200

hex = 80

**POST-LAB QUESTIONS**

1. Write a C program to count number of vowels in your name
2. Write a C program to find whether given string is palindrome or not

**RESULT**

Thus the C program to convert the given decimal number into binary, octal and hexadecimal numbers using user defined functions was successfully written and executed.