EAST WEST UNIVERSITY

« Mini Project Report »

CSE106 (Discrete Mathematics)

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Project Topic **Numerical Method**

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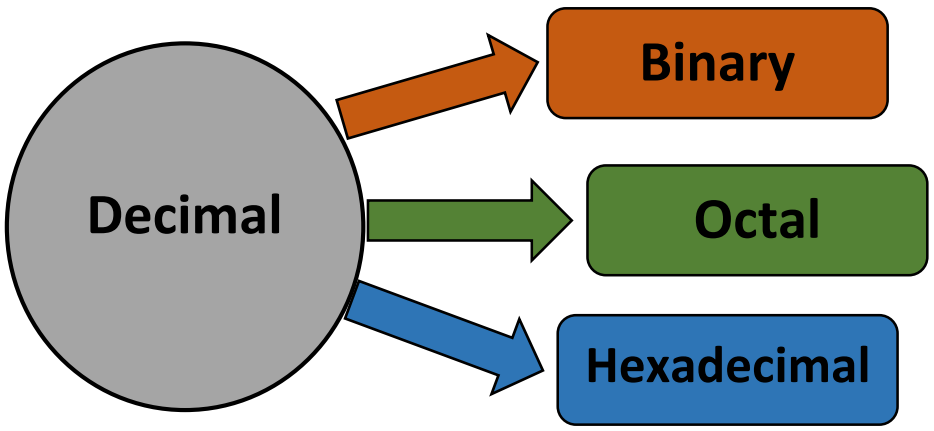
INTRODUCTION :

The system of expressing a number by specific symbols or signs is called number system. One type of number system is positional number system.

Positional Number : A number system that has a fundamental sign, base or base and its local value is called a positional number system. There are four types of positional number :

- Decimal
- Binary
- Octal
- Hexadecimal



METHOD :

- In this program we used string , array , while loop(1) , switch case , conditional expression , recursive function , reminder , mod , base .
- We used while loop (1) because after the code finishes it starts from the beginning .
- We are using switch case to separate these bases .
- We use recursive function until the final result is zero then we call again and again main function .
- We used mod to get reminder .

CODE :

pro 1.c

```c
#include<stdio.h>
#include <stdlib.h>
#include<string.h>
void convert_to_x_base(int, int);
int main(void)
{
    int num, choice, base;
    char ch[100];
    printf ("\n\n\t\t          .........WELCOME TO OUR NUMERICAL METHOD PROJECT.........   \n");
    while(1)
    {
        printf("\n\nSelect conversion: \n\n");
        printf("1. Decimal to binary. \n");
        printf("2. Decimal to octal. \n");
        printf("3. Decimal to hexadecimal. \n");
        printf("4. Exit. \n");
        printf("\nEnter your choice: ");
        scanf("%d", &choice);

        switch(choice)
        {
            case 1:
                base = 2;
                break;
            case 2:
                base = 8;
                break;
            case 3:
```

1.c

```
28              case 3:
29                  base = 16;
30                  break;
31              case 4:
32                  printf("Exiting ...");
33                  exit(1);
34              default:
35                  printf("Invalid choice.\n\n");
36                  continue;
37          }
38          printf("Enter a number: ");
39          scanf("%s", &ch);
40          int len=strlen(ch);
41          if(checkValidity(ch,len)){
42          printf("Result = ");
43          num=atoi(ch);
44          convert_to_x_base(num, base);
45          }
46          else{
47              printf("\nWrong Input.\n");
48          }
49              printf("\n\n");
50      }
51      return 0;
52  }
53
54  int checkValidity(char ch[],int len){
55      int i;
```

*pro 1.c

```
57          if(ch[i]<48 || ch[i]>57){
58      return 0;
59          }
60      }
61      return 1;
62  }
63
64  void convert_to_x_base(int num, int base)
65  {
66      int rem;
67
68      if (num == 0)
69      {
70          return;
71      }
72      else
73      {
74          rem = num % base;
75          convert_to_x_base(num/base, base);
76          if(base == 16 && rem >= 10)
77          {
78              printf("%c", rem+55);
79          }
80          else
81          {
82              printf("%d", rem);
83          }
84      }
```

INPUT & OUTPUT :

"C:\Users\RTC\Documents\pro 1.exe"

```
                        .........


Select conversion:

1. Decimal to binary.
2. Decimal to octal.
3. Decimal to hexadecimal.
4. Exit.

Enter your choice: 1
Enter a number: 256
Result = 100000000
```

```
Select conversion:

1. Decimal to binary.
2. Decimal to octal.
3. Decimal to hexadecimal.
4. Exit.

Enter your choice: 2
Enter a number: 196
Result = 304
```

"C:\Users\RTC\Documents\pro 1.exe"

```
Select conversion:

1. Decimal to binary.
2. Decimal to octal.
3. Decimal to hexadecimal.
4. Exit.

Enter your choice: 3
Enter a number: 193
Result = C1
```

```
Select conversion:

1. Decimal to binary.
2. Decimal to octal.
3. Decimal to hexadecimal.
4. Exit.

Enter your choice: 1
Enter a number: 185A

Wrong Input.



Select conversion:

1. Decimal to binary.
2. Decimal to octal.
3. Decimal to hexadecimal.
4. Exit.

Enter your choice: _
```

Type here to search

CONCLUSION : The number system is an essential part of computer technology enabling computers to perform all functions in just a few seconds .

THANK YOU