GYALPOZHING COLLEGE

OF

INFORMATION TECHNOLOGY

Assignment 1
C Programming ITP203

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Question 1

Ans: Given Binary number is (01110)

1's complement is 10001

2's complement is (1's complement +1) i.e

$$\begin{array}{r} 10001 \quad \text{(1's complement)} \\ +\ 1 \\ \hline 10010 \quad \text{(2's complement)} \end{array}$$

∴ 2's complement is 10010.

Question 2

Ans: Given Binary is (10001)

∴ 1's complement is 01110 //

Question 3

Ans:

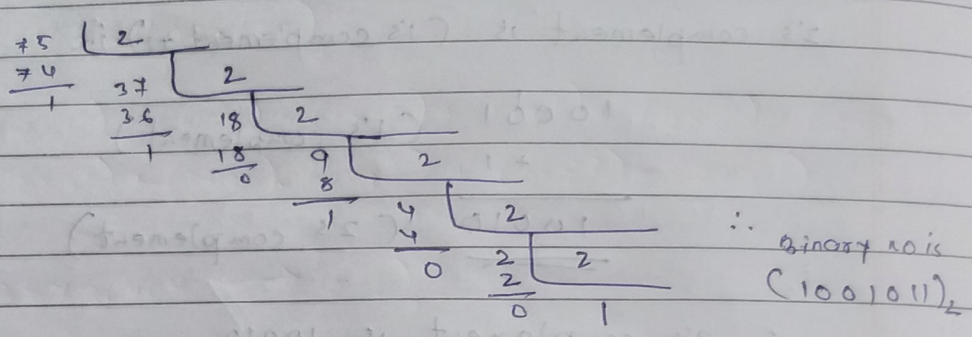
$$\begin{array}{r|l} & 00101 \\ 101 & 11010 \\ & 0\downarrow\ 1\ 1 \\ & 11 \\ & -\ 0 \\ & 110 \\ & -101 \\ & 0011 \\ & -\ \ 0 \\ & 110 \\ & -101 \\ & 001 \end{array}$$

∴ Reminder = 001

Quotient = 00101

Question 4.

$(75)_{10} \longrightarrow (?)_{16}$



∴ Binary no is $(1001011)_2$

∴ $(75)_{10} \longrightarrow (1001011)_2$

converting $(1001011)_2$ to Hexadecimal

0100 1011

4 B ∴ Hexadecimal is $(4B)_{16}$

∴ $(75)_{10} \longrightarrow (4B)_{16}$ //

Question 5

$(776)_8 + (01011011)_2 \rightarrow (?)_8$

Firstly convert $(01011011)_2$ to octal converting base 2 to 10

$$\overset{8}{0}\ \overset{7}{1}\ \overset{6}{0}\ \overset{5}{1}\ \overset{4}{1}\ \overset{3}{0}\ \overset{2}{1}\ \overset{1}{1}$$

Now : $(1\times2^0) + (1\times2^1) + (0\times2^2) + (1\times2^3) + (1\times2^4) + (0\times2^5) + (1\times2^6) + (0\times2^7)$

$= 1 + 2 + 4 + 0 + 16 + 32 + 128 + 0$

$= 183$

$\therefore (183)_{10}$

The convert base 10 to 8

8	183	7
8	22	6
	2	

$\therefore (183)_{10} \rightarrow (267)_8$

$(776)_8 + (267)_8 = (1265)_8$ //

$$\begin{array}{r} {}^{1}7\,{}^{1}7\,6 \\ 2\,6\,7 \\ \hline 1\,2\,6\,5 \end{array}$$

Question 6:

$(10221102.102)_3 = (?)_9$

$(\overset{7\ 6\ 5\ 4\ 3\ 2\ 1\ 0\ -1\ -2\ -3}{1\ 0\ 2\ 2\ 1\ 1\ 0\ 2\ .\ 1\ 0\ 2})_3$

$= (2\times3^0) + (0\times3^1) + (1\times3^2) + (1\times3^3) + (2\times3^4) + (2\times3^5) + (0\times3^6) + (1\times3^7) + (1\times3^{-1}) + (0\times3^{-2}) + (2\times3^{-3})$

$2873.407 \longrightarrow (?)_9$

9 | 2873	→	2
9 | 319		4
9 | 35		8
3		

$= 3842$

$\therefore$ $0.407\times9 = 3.663 \rightarrow 3$

$0.663\times9 = 5.967 \rightarrow 5$

$0.967\times9 = 8.703 \rightarrow 8$

$= (3842.358)_9$

$\therefore$ $(10221102.102)_3 = (3842.358)_9$ //

Question7

```
#include <stdio.h>
int main() {
 int x1 = 0, x2 = 1, nextTerm = 0, n;
 printf("Enter a positive number: ");
 scanf("%d", &n);
 printf("Fibonacci Series: %d, %d, ", x1, x2);
 nextTerm = x1 + x2;
 while (nextTerm <= n) {
 printf("%d, ", nextTerm);
 x1 = x2;
 x2 = nextTerm;
 nextTerm = x1 + x2;
 }
 return 0;
}
```

Output

Question 8

```
#include <stdio.h>
int main() {

 int num, Number, remainder, result = 0;;


 printf("Enter a three-digit number: ");
 scanf("%d", &num);

 Number = num;
 while (Number != 0) {
// remainder contains the last digit
 remainder = Number % 10;

 result += remainder * remainder * remainder;

 // removing last digit from the orignal number
 Number = Number/ 10;
 }
 if (result == num)
 printf("%d is an Armstrong number.", num);
 else
 printf("%d is not an Armstrong number.", num);
 printf("\n");
 return 0;
}
```

Output