

Assignment 1

C programming

ITP203

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Q1) Perform the 2's complement on Binary Number (01110) and note down the result.

Assignment 1 (ITP203-Theory)

- 1) Perform the 2's complement on Binary Number (01110) and note down the result.

Firstly, perform 1's complement on Binary Number 01110

$$01110 \rightarrow 10001$$

Now, perform second complement

$$\begin{array}{r} 10001 \\ + \quad \quad 1 \\ \hline 10010 \end{array}$$

$1+1=0$ and carry 1 to next higher column as 1 is the highest digit in binary system and number greater than 1 requires that a digit to be carried over.

Question 2

Perform the 1's complement on (10001).

2) Perform the 1's complement on (10001).

Ans:- 10001
 $= 01110$ „ (simply, invert the given number.)

3) You have $A = 11010$ and $B = 101$.
Divide A by B and find the Quotient and Remainder.

$$\begin{array}{ccc} 11010 & \div & 101 = ? \\ \text{Divident} & & \text{Divisor} \quad \text{quotient} \end{array}$$

$$0 - 0 = 0$$

$$1 - 0 = 1$$

$$1 - 1 = 0$$

$$0 - 1 = 1, \text{ with a borrow bit from the next more significant bit}$$

binary subtraction rule

Question 3

You have $A = 11010$ and $B = 101$. Divide A by B and find the Quotient and Remainder.

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$$\begin{array}{r} \textcircled{101} \text{ - quotient} \\ 101 \overline{) 11010} \\ \underline{101} \\ 0011 \\ \underline{0011} \\ 00 \\ \underline{00} \\ 110 \\ \underline{101} \\ \textcircled{011} \text{ remainder} \end{array}$$

\therefore Quotient = 101
Remainder = 011 //

Question 4

Convert $(75)_{10}$ into Hexadecimal representation?

4) Convert $(75)_{10}$ into Hexadecimal representation?

Ans: $(75)_{10} = (?)_{16}$

16		75	
		4	11

$$10 = A$$

$$11 = B$$

$$(75)_{10} = (4B)_{16} //$$

Question 5

$$(776)_8 + (010110111)_2 = (?)_8.$$

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$$5) (776)_8 + (010110111)_2 = (?)_8.$$

ans: ① Convert $(010110111)_2 = (?)_{10}$

(binary to decimal)

$$\begin{array}{cccccccc} 0 & 1 & 0 & 1 & 1 & 0 & 1 & 1 & 1 \\ 2^8 & 2^7 & 2^6 & 2^5 & 2^4 & 2^3 & 2^2 & 2^1 & 2^0 \end{array}$$

$$= 0 \times 2^8 + 1 \times 2^7 + 0 \times 2^6 + 1 \times 2^5 + 1 \times 2^4 + 0 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0$$

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

$$= 128 + 32 + 16 + 7$$

$$= 183 = (183)_{10}$$

$$\begin{array}{r} 128 \\ 32 \\ 16 \\ 7 \\ \hline 183 \end{array}$$

① Convert decimal to octal

$$(183)_{10} = (?)_8$$

8	183	
8	22	7
	2	6

$$\begin{array}{r} 22 \\ 8 \overline{) 183} \\ \underline{16} \\ 23 \\ \underline{16} \\ 7 \end{array}$$

$$= (267)_8$$

Add,

$$③ (776)_8 + (267)_8 = (?)_8$$

$$\begin{array}{r} ^1 ^1 ^1 \\ + 776 \\ \underline{267} \\ 1265 \end{array}$$

$$1378$$

$$13-8=5$$

$$1478$$

$$14-8=6$$

$$1078$$

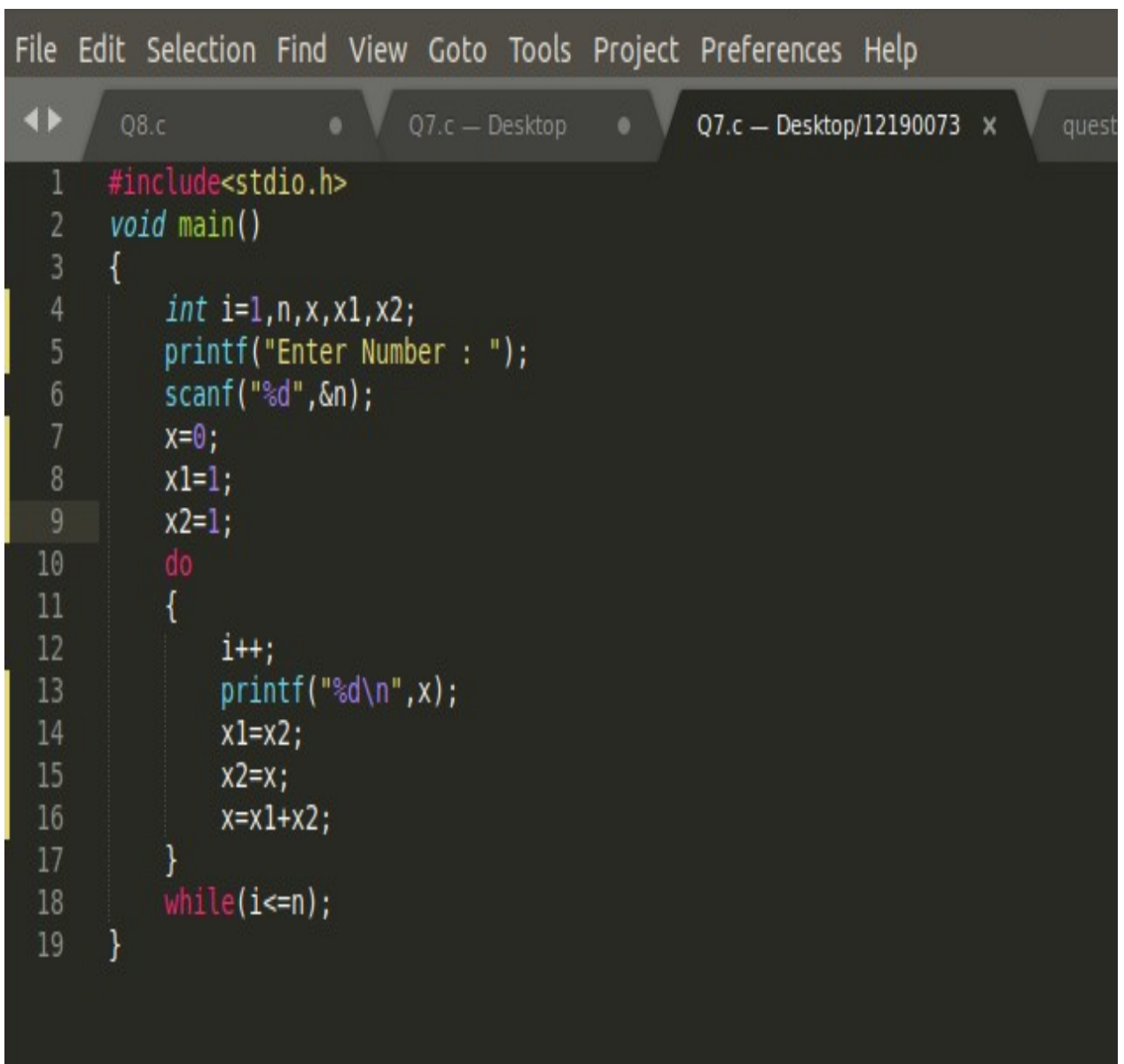
$$10-8=2$$

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

Question 7

WAP in C using While-Loop/Do-While Loop to find a Fibonacci series of "N" number of terms. Example:-If N=8, then the Fibonacci Series = 0, 1, 1, 2, 3, 5, 8, 13.

Answer:



```
File Edit Selection Find View Goto Tools Project Preferences Help
Q8.c Q7.c — Desktop Q7.c — Desktop/12190073 x quest
1  #include<stdio.h>
2  void main()
3  {
4      int i=1,n,x,x1,x2;
5      printf("Enter Number : ");
6      scanf("%d",&n);
7      x=0;
8      x1=1;
9      x2=1;
10     do
11     {
12         i++;
13         printf("%d\n",x);
14         x1=x2;
15         x2=x;
16         x=x1+x2;
17     }
18     while(i<=n);
19 }
```


Output:

```
ies  Terminal ▾ 10:33 user@lab127-OptiPlex-3040: ~/Desk

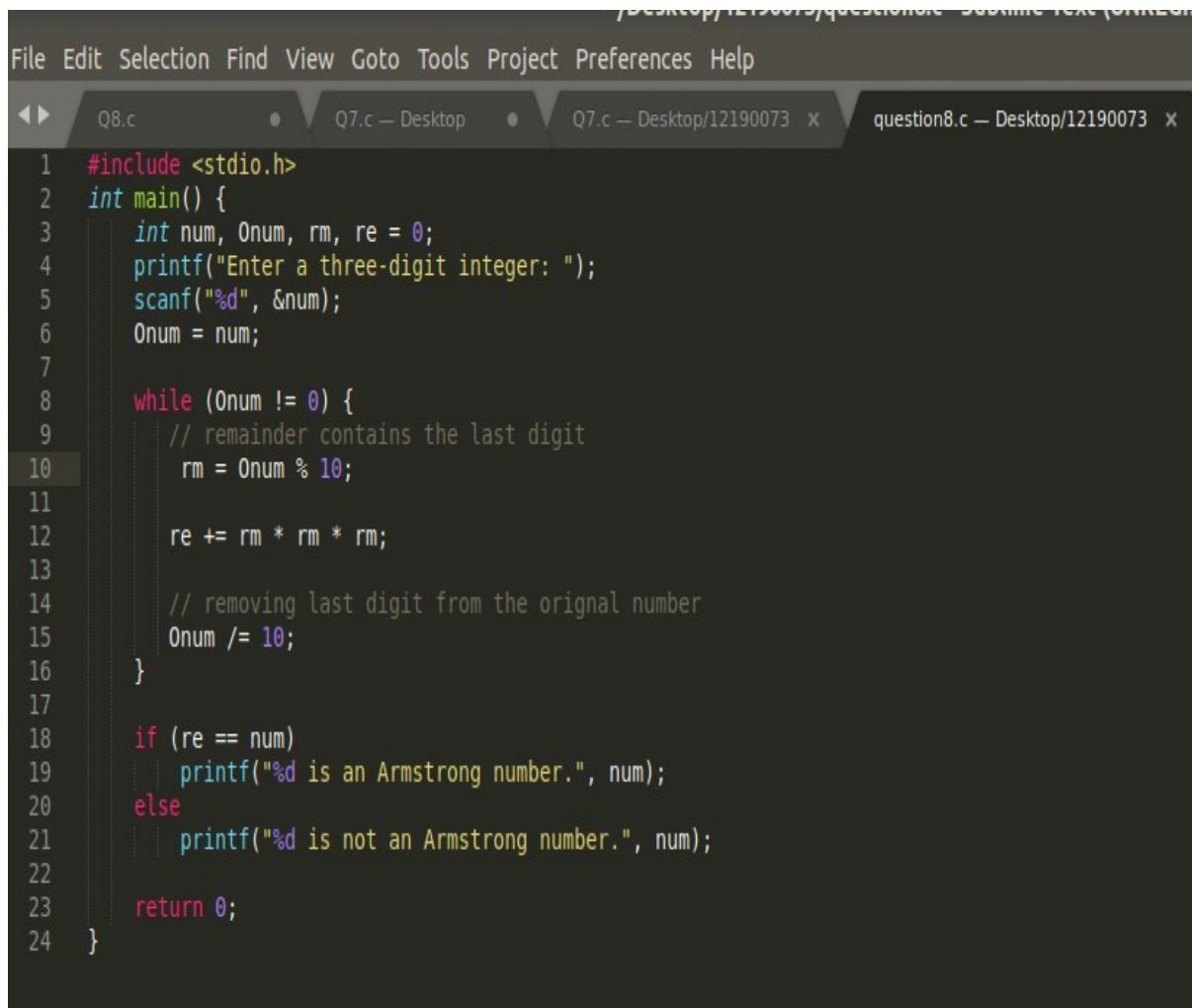
File Edit View Search Terminal Help
user@lab127-OptiPlex-3040:~$ cd Desktop
user@lab127-OptiPlex-3040:~/Desktop$ cd 12190073
user@lab127-OptiPlex-3040:~/Desktop/12190073$ gcc Q7.c -o q1
user@lab127-OptiPlex-3040:~/Desktop/12190073$ ./q1
Enter Number : 8
0
1
1
2
3
5
8
13
user@lab127-OptiPlex-3040:~/Desktop/12190073$ gcc Q7.c -o q1
user@lab127-OptiPlex-3040:~/Desktop/12190073$ ./q1
Enter Number : 4
0
1
1
2
user@lab127-OptiPlex-3040:~/Desktop/12190073$
```

Question 8

WAP in C using While-Loop/Do-While Loop to find if a number(any digit)is Armstrong Number.

Syntax:- $abc = a_n + b_n + c_n$ (Example of 3 digit number)

Example:- $153 = 1*1*1 + 5*5*5 + 3*3*3$



```
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Q8.c Q7.c — Desktop Q7.c — Desktop/12190073 x question8.c — Desktop/12190073 x
1  #include <stdio.h>
2  int main() {
3      int num, Onum, rm, re = 0;
4      printf("Enter a three-digit integer: ");
5      scanf("%d", &num);
6      Onum = num;
7
8      while (Onum != 0) {
9          // remainder contains the last digit
10         rm = Onum % 10;
11
12         re += rm * rm * rm;
13
14         // removing last digit from the original number
15         Onum /= 10;
16     }
17
18     if (re == num)
19         printf("%d is an Armstrong number.", num);
20     else
21         printf("%d is not an Armstrong number.", num);
22
23     return 0;
24 }
```


Output:

```
user@lab127-OptiPlex-3040:~/Desktop/12190073$ gcc question8.c -o q1
user@lab127-OptiPlex-3040:~/Desktop/12190073$ ./q1
Enter a three-digit integer: 748
748 is not an Armstrong number.user@lab127-OptiPlex-3040:~/Desktop/12190073$ gcc question8.c -o q1
user@lab127-OptiPlex-3040:~/Desktop/12190073$ ./q1
Enter a three-digit integer: 135
135 is not an Armstrong number.user@lab127-OptiPlex-3040:~/Desktop/12190073$ gcc question8.c -o q1
user@lab127-OptiPlex-3040:~/Desktop/12190073$ ./q1
Enter a three-digit integer: 370
370 is an Armstrong number.user@lab127-OptiPlex-3040:~/Desktop/12190073$ gcc question8.c -o q1
user@lab127-OptiPlex-3040:~/Desktop/12190073$ ./q1
Enter a three-digit integer: 153
153 is an Armstrong number.user@lab127-OptiPlex-3040:~/Desktop/12190073$
```