



Institute of technology of Cambodia

Departments of Information technology and Communication

Engineering

Course: Algorithms and programming I

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TP –06 (More practice with loop)

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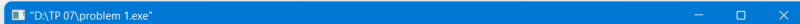
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Problem 1

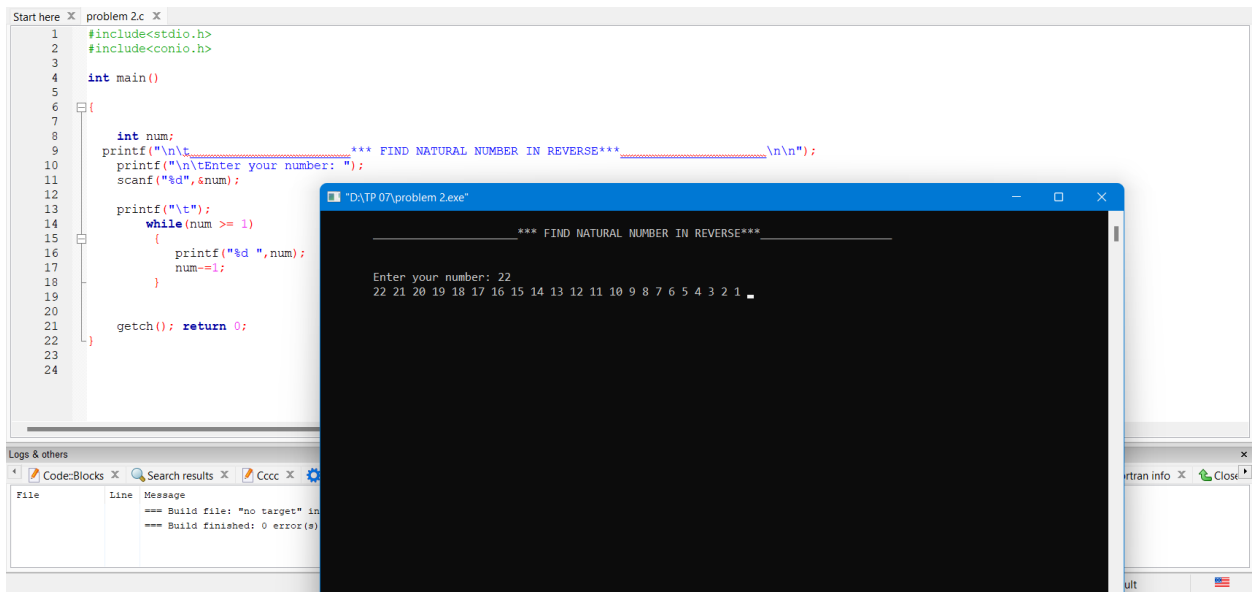
Write a C program to print all natural numbers from 1 to n using while loop

```
Start here x problem 1.c x
1  #include<stdio.h>
2  #include<conio.h>
3
4  int main()
5
6  {
7
8      int num,n=1;
9      printf("\n\t*** FIND NATURAL NUMBER***\n\n");
10     printf("\n\tEnter your number: ");
11     scanf("%d",&num);
12     printf("\n\tNatural number between 1 to %d \n",num);
13
14     printf("\t");
15     while(n<=num)
16     {
17         printf("%d ",n);
18         n+=1;
19     }
20
21     getch(); return 0;
22
23 }
24
```



Problem 2

Write a C program to print all natural numbers in reverse (from n to 1). -using while loop



The screenshot displays the Code::Blocks IDE with a C program open in the editor. The program is designed to print natural numbers in reverse order using a while loop. The source code is as follows:

```
1 #include<stdio.h>
2 #include<conio.h>
3
4 int main()
5 {
6
7     int num;
8     printf("\n\t*** FIND NATURAL NUMBER IN REVERSE***\n\n");
9     printf("\n\tEnter your number: ");
10    scanf("%d",&num);
11
12    printf("\n\t");
13    while(num >= 1)
14    {
15        printf("%d ",num);
16        num--;
17    }
18
19    getch(); return 0;
20 }
21
22
23
24
```

The execution window, titled "D:\TP 07\problem 2.exe", shows the program's output. It prompts the user to "Enter your number: 22" and then prints the sequence of numbers from 22 down to 1, separated by spaces: "22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 _".

The "Logs & others" panel at the bottom left shows the build process:

```
File      Line      Message
==== Build file: "no target" in
==== Build finished: 0 error(s)
```

Problem 3

Write a C program to print all alphabets from a to z. -using while loop

The screenshot shows a C program being edited in a code editor and its execution output in a separate window.

C Program Code:

```
1 #include<stdio.h>
2 #include<conio.h>
3
4
5 int main()
6 {
7     printf("\n\n\t***print all alphabets (a -z)***\n\n");
8     printf("\t");
9     int n=97;
10    while(n<=122)
11    {
12        printf("%c ",n);
13        n+=1;
14    }
15
16    getch(); return 0;
17 }
18
```

Execution Output:

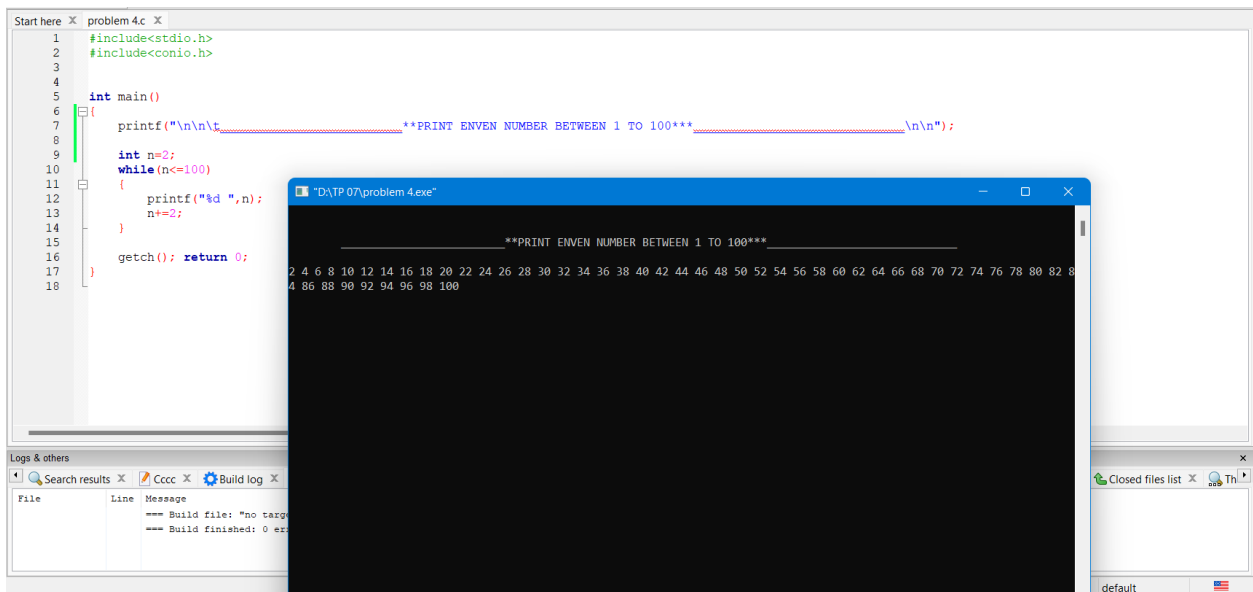
The output window displays the result of running the program:

```
***print all alphabets (a -z)***
a b c d e f g h i j k l m n o p q r s t u v w x y z _
```

The output shows the alphabet from 'a' to 'z' followed by a space character, which corresponds to the ASCII values 97 through 122 defined in the program's loop.

Problem 4

Write a C program to print all even numbers between 1 to 100. -using while loop



The image shows a C program in a code editor and its execution output in a terminal window. The code is as follows:

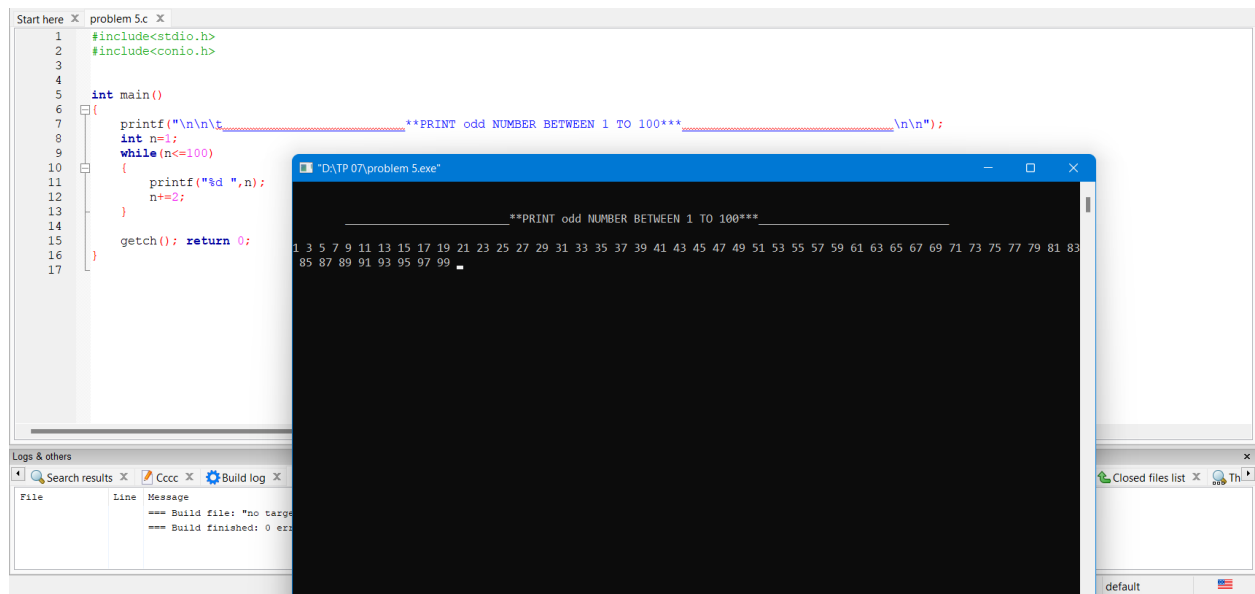
```
1 #include<stdio.h>
2 #include<conio.h>
3
4
5 int main()
6 {
7     printf("\n\n\t*****PRINT EVEN NUMBER BETWEEN 1 TO 100*****\n\n");
8
9     int n=2;
10    while(n<=100)
11    {
12        printf("%d ",n);
13        n+=2;
14    }
15
16    getch(); return 0;
17 }
18
```

The terminal window shows the output of the program, which is a list of even numbers from 2 to 100, printed in two lines:

```
*****PRINT EVEN NUMBER BETWEEN 1 TO 100*****
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100
```

Problem 5

Write a C program to print all odd number between 1 to 100.



The image shows a C program in a code editor and its execution output in a terminal window.

Code Editor (problem 5.c):

```
1 #include<stdio.h>
2 #include<conio.h>
3
4
5 int main()
6 {
7     printf("\n\n\t*****PRINT odd NUMBER BETWEEN 1 TO 100*****\n\n");
8     int n=1;
9     while(n<=100)
10     {
11         printf("%d ",n);
12         n+=2;
13     }
14     getch(); return 0;
15 }
16
17
```

Terminal Window (D:\TP 07\problem 5.exe):

```
*****PRINT odd NUMBER BETWEEN 1 TO 100*****
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69 71 73 75 77 79 81 83
85 87 89 91 93 95 97 99
```

Logs & others:

| File | Line | Message |
|------|------|------------------------------|
| | | === Build file: "no target" |
| | | === Build finished: 0 errors |

Problem 6

Write a C program to count number of digits in a number.

The image shows a screenshot of a C program being written and executed. The program is named 'problem 6.c' and is located in the directory 'D:\TP 07\'. The code is as follows:

```
1 #include<stdio.h>
2 #include<conio.h>
3
4 int main()
5 {
6     int num;
7     int digit = 0;
8
9     printf("\n\n\t***COUNT OF DIGITS IN A NUMBER***\n\n");
10    printf("\n\tEnter your number: ");
11    scanf("%d",&num);
12
13    printf("\t");
14    while(num!=0)
15    {
16        digit = digit + 1;
17        num = num / 10;
18    }
19    printf("%d",digit);
20
21    getch(); return 0;
22
23 }
24
```

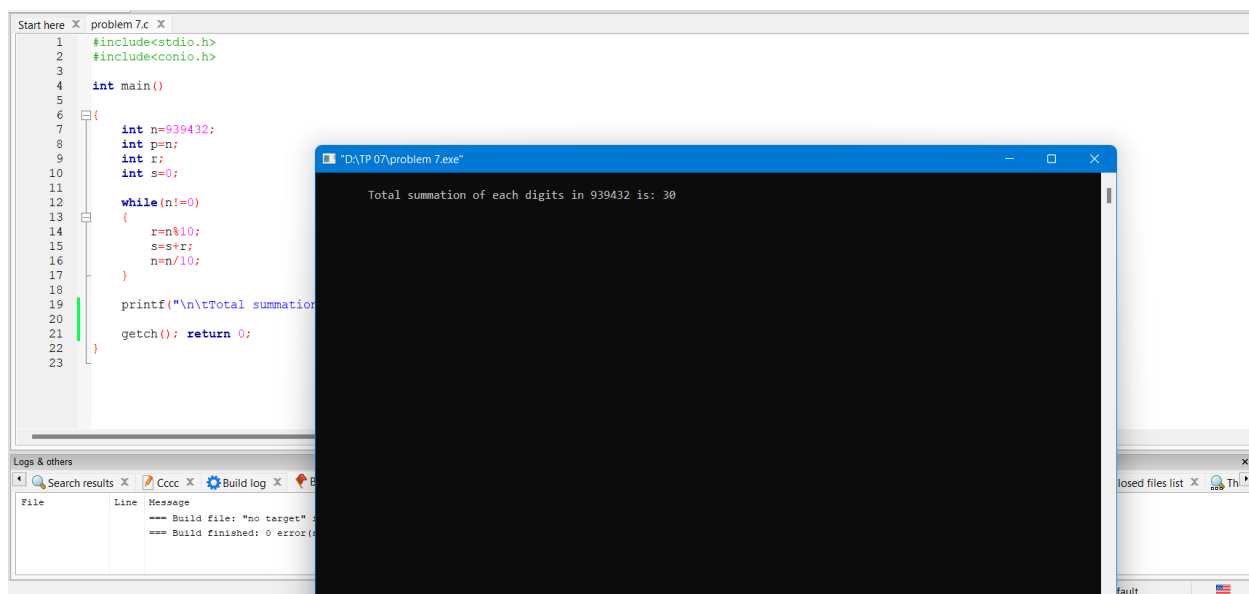
The program is compiled and executed. The output window shows the following text:

```
***COUNT OF DIGITS IN A NUMBER***
Enter your number: 23435423
8
```

The output indicates that the number 23435423 has 8 digits.

Problem 7

Write a C program to calculate sum of digits of a number.



The image shows a screenshot of a C program in Visual Studio. The program is named "problem 7.c" and is located at "D:\TP 07\problem 7.exe". The code calculates the sum of the digits of the number 939432. The output window shows the result: "Total summation of each digits in 939432 is: 30".

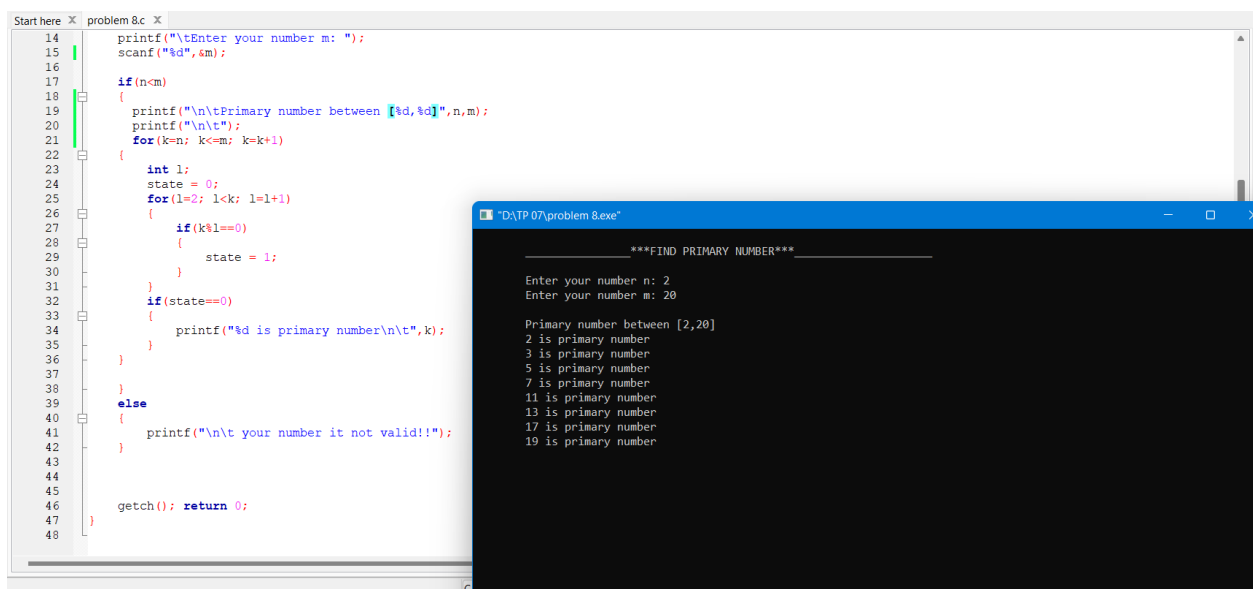
```
1 #include<stdio.h>
2 #include<conio.h>
3
4 int main()
5 {
6     int n=939432;
7     int p=n;
8     int r;
9     int s=0;
10
11     while(n!=0)
12     {
13         r=n%10;
14         s=s+r;
15         n=n/10;
16     }
17
18     printf("\n\tTotal summation of each digits in %d is: %d", p, s);
19     getch(); return 0;
20 }
```

Build log messages:

| File | Line | Message |
|------|------|--|
| | | === Build file: "no target" === |
| | | === Build finished: 0 error(s), 0 warning(s) === |

Problem 8

Write a C program to display all primary numbers between $[n, m]$, where n and m are integer numbers input by a user. Validate that n should be always less than m , otherwise shows some message warning.



The image shows a C program in a code editor and its execution output in a terminal window.

Code Editor (problem 8.c):

```
14 printf("\nEnter your number m: ");
15 scanf("%d", &m);
16
17 if(n<m)
18 {
19     printf("\n\tPrimary number between [%d,%d]", n,m);
20     printf("\n\t");
21     for(k=n; k<=m; k=k+1)
22     {
23         int l;
24         state = 0;
25         for(l=2; l<k; l=l+1)
26         {
27             if(k%l==0)
28             {
29                 state = 1;
30             }
31         }
32         if(state==0)
33         {
34             printf("%d is primary number\n\t",k);
35         }
36     }
37 }
38 else
39 {
40     printf("\n\t your number it not valid!!");
41 }
42
43
44
45
46 getch(); return 0;
47
48 }
```

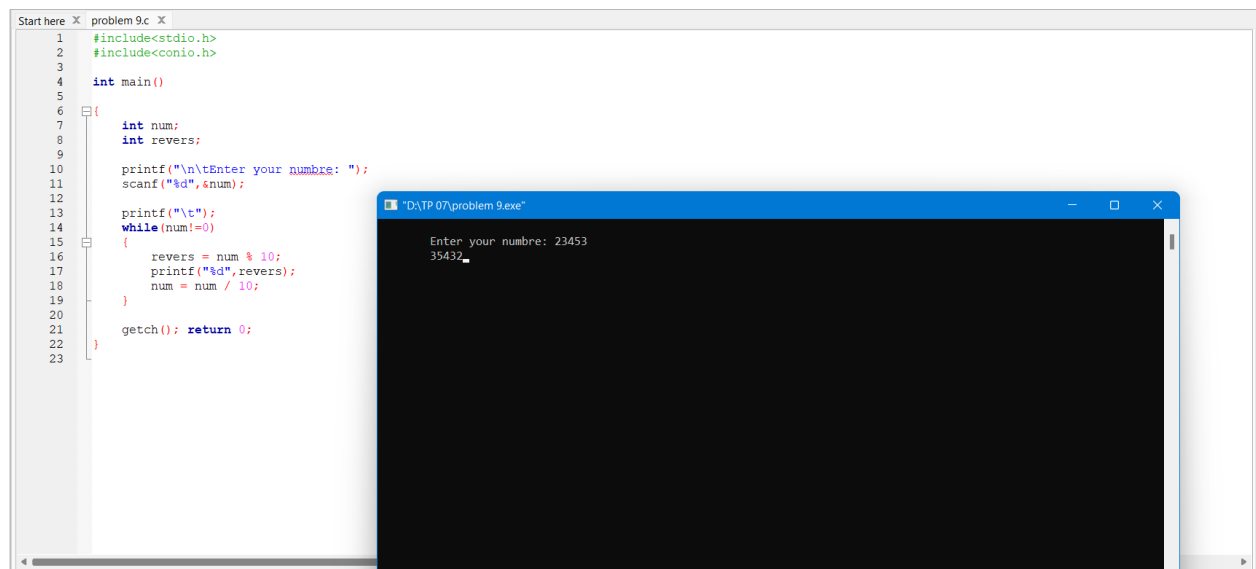
Terminal Window ("D:\TP 07\problem 8.exe"):

```
****FIND PRIMARY NUMBER****
Enter your number n: 2
Enter your number m: 20

Primary number between [2,20]
2 is primary number
3 is primary number
5 is primary number
7 is primary number
11 is primary number
13 is primary number
17 is primary number
19 is primary number
```

Problem 9

Write a C program to enter a number and print its reverse.



The image shows a C program in a text editor and its execution in a console window. The program is designed to reverse a number entered by the user. It uses a while loop to extract digits from the number and build the reversed number. The console window shows the user entering '23453' and the program outputting '35432'.

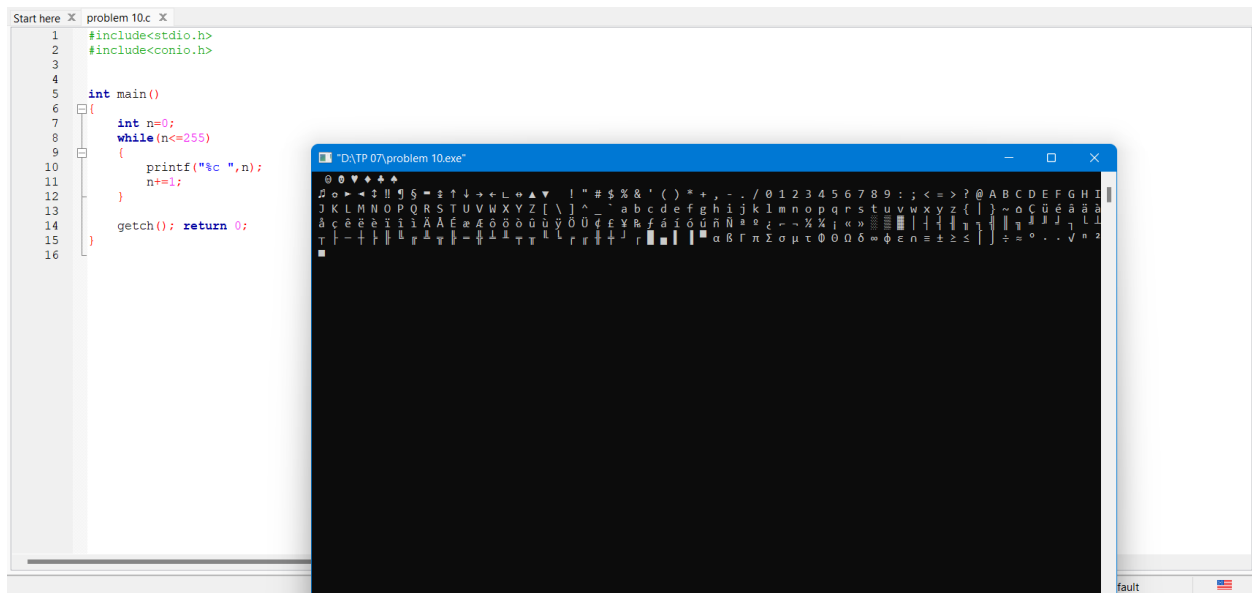
```
1  #include<stdio.h>
2  #include<conio.h>
3
4  int main()
5  {
6      int num;
7      int revers;
8
9      printf("\n\tEnter your numbre: ");
10     scanf("%d",&num);
11
12     printf("\t");
13     while(num!=0)
14     {
15         revers = num % 10;
16         printf("%d",revers);
17         num = num / 10;
18     }
19
20     getch(); return 0;
21
22
23
```

Execution output:

```
Enter your numbre: 23453
35432_
```

Problem 10

Write a C program to print all ASCII codes (0-255) and its character.



The image shows a C program in a text editor and its execution in a command prompt window. The program, named 'problem 10.c', includes `<stdio.h>` and `<conio.h>`. It defines a `main` function that initializes `n` to 0 and enters a `while` loop that continues as long as `n` is less than or equal to 255. Inside the loop, it prints the character corresponding to the ASCII code `n` using `printf("%c ", n);` and increments `n` by 1. After the loop, it calls `getch();` and returns 0. The command prompt window, titled 'D:\TP 07\problem 10.exe', displays the output of the program, which is a grid of characters representing the ASCII table. The first row contains control characters and the first 10 printable characters. The subsequent rows contain the letters A-Z, a-z, and the remaining printable characters, including punctuation and symbols. The output is formatted with spaces between characters to fit within the window's width.

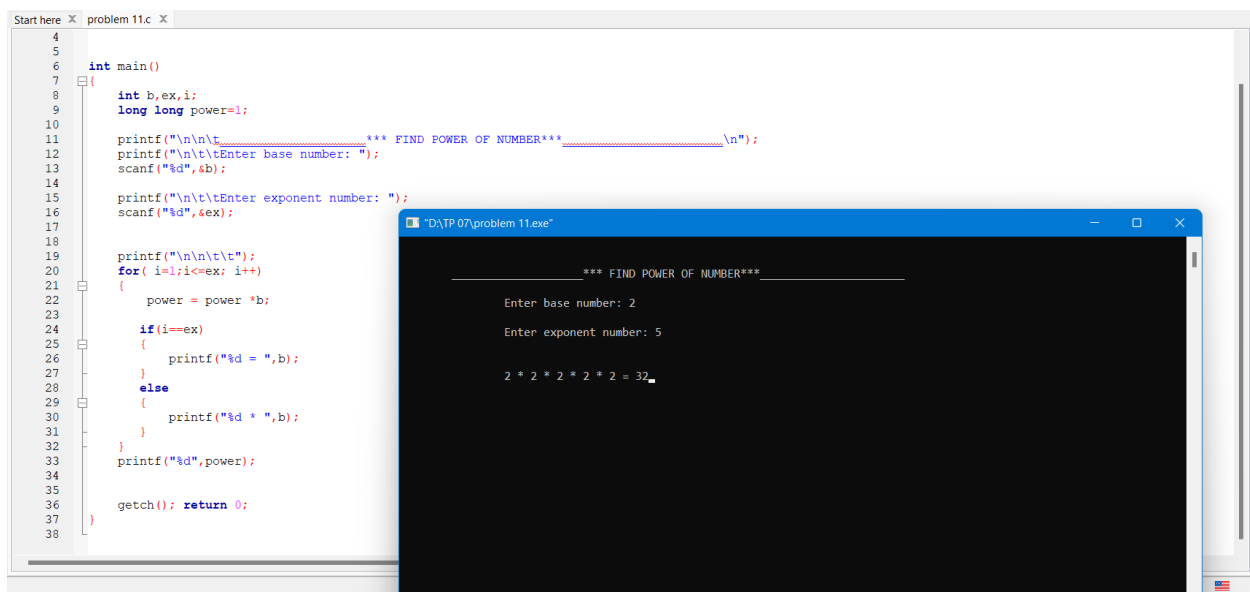
```
1 #include<stdio.h>
2 #include<conio.h>
3
4
5 int main()
6 {
7     int n=0;
8     while(n<=255)
9     {
10         printf("%c ", n);
11         n+=1;
12     }
13     getch(); return 0;
14 }
15
16
```

Output (ASCII Table):

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | : | < | = | > | ? | @ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | [| \ | ^ | _ | ` | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z | { | | } | ~ | 0 |

Problem 11

Write a C program to find power of a number using for loop.



The image shows a C program in a text editor and its execution in a command prompt window.

C Program Code:

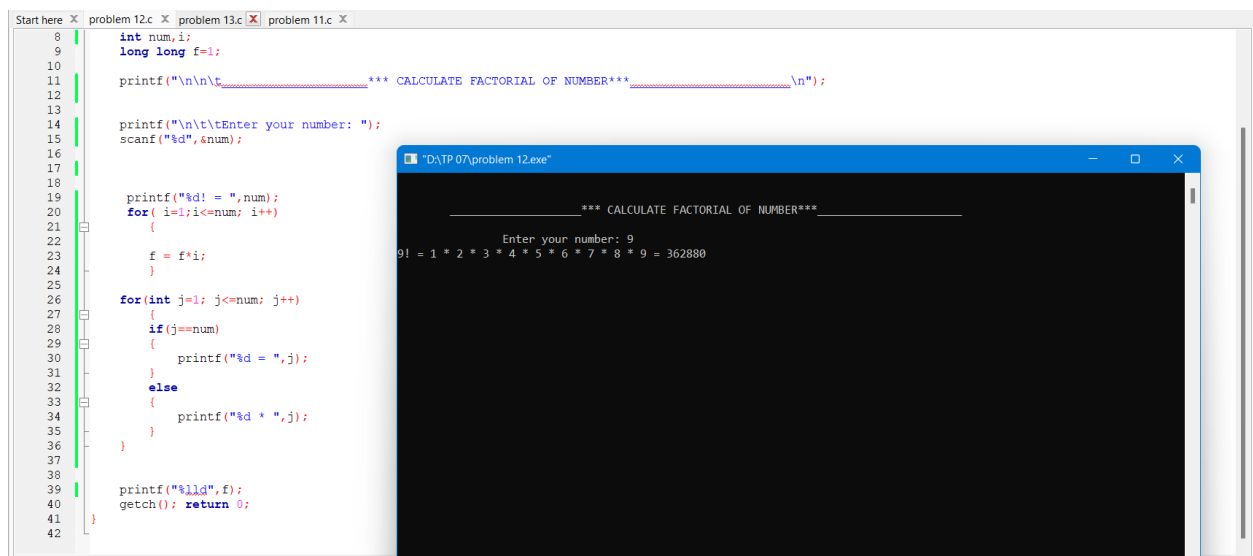
```
4
5
6 int main()
7 {
8     int b,ex,i;
9     long long power=1;
10
11     printf("\n\n\t*** FIND POWER OF NUMBER***\n\n");
12     printf("\n\t\tEnter base number: ");
13     scanf("%d",&b);
14
15     printf("\n\t\tEnter exponent number: ");
16     scanf("%d",&ex);
17
18
19     printf("\n\n\t\t");
20     for( i=1;i<=ex; i++)
21     {
22         power = power *b;
23
24         if(i==ex)
25         {
26             printf("%d = ",b);
27         }
28         else
29         {
30             printf("%d * ",b);
31         }
32     }
33     printf("%d",power);
34
35     getch(); return 0;
36
37 }
38
```

Execution Output:

```
"D:\TP 07\problem 11.exe"
*** FIND POWER OF NUMBER***
Enter base number: 2
Enter exponent number: 5
2 * 2 * 2 * 2 * 2 = 32
```

Problem 12

Write a C program to calculate factorial of a number.



The image shows a C program in a code editor and its execution output in a separate window. The code calculates the factorial of a number entered by the user. It uses a loop to calculate the factorial and a nested loop to display the calculation steps.

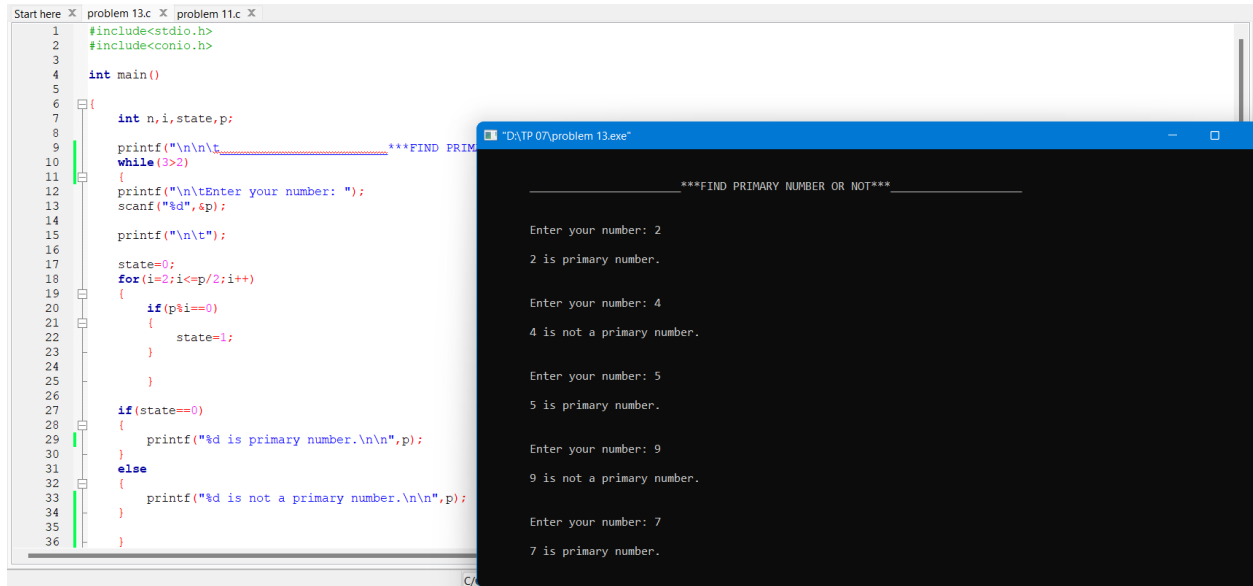
```
8  int num,i;
9  long long f=1;
10
11  printf("\n\n\t***** CALCULATE FACTORIAL OF NUMBER*****\n\n");
12
13
14  printf("\n\n\tEnter your number: ");
15  scanf("%d",&num);
16
17
18
19  printf("%d! = ",num);
20  for(i=1;i<=num; i++)
21  {
22      f = f*i;
23  }
24
25
26  for(int j=1; j<=num; j++)
27  {
28      if(j==num)
29      {
30          printf("%d = ",j);
31      }
32      else
33      {
34          printf("%d * ",j);
35      }
36  }
37
38  printf("%lld",f);
39  getch(); return 0;
40
41
42
```

The execution window shows the output of the program for the input number 9:

```
***** CALCULATE FACTORIAL OF NUMBER*****
Enter your number: 9
9! = 1 * 2 * 3 * 4 * 5 * 6 * 7 * 8 * 9 = 362880
```

Problem 13

Write a C program to check whether a number is Prime number or not.



The image shows a C program in a code editor and its execution in a terminal window. The code is a C program to check if a number is prime. It includes `<stdio.h>` and `<conio.h>`. The `main` function declares variables `n`, `i`, `state`, and `p`. It uses a `while` loop to repeatedly prompt the user for a number. For each number, it initializes `state` to 0 and uses a `for` loop to check divisibility from 2 to `p/2`. If a divisor is found, `state` is set to 1. After the loop, it checks `state` and prints whether the number is a primary number or not.

```
1 #include<stdio.h>
2 #include<conio.h>
3
4 int main()
5 {
6     int n,i,state,p;
7
8     printf("\n\n\t***FIND PRIM
9
10 while(3>2)
11 {
12     printf("\n\tEnter your number: ");
13     scanf("%d",&p);
14
15     printf("\n\t");
16
17     state=0;
18     for(i=2;i<=p/2;i++)
19     {
20         if(p%i==0)
21         {
22             state=1;
23         }
24     }
25
26     if(state==0)
27     {
28         printf("%d is primary number.\n\n",p);
29     }
30     else
31     {
32         printf("%d is not a primary number.\n\n",p);
33     }
34 }
35
36 }
```

The terminal window shows the output of the program for inputs 2, 4, 5, 9, and 7. The output is as follows:

```
***FIND PRIMARY NUMBER OR NOT***

Enter your number: 2
2 is primary number.

Enter your number: 4
4 is not a primary number.

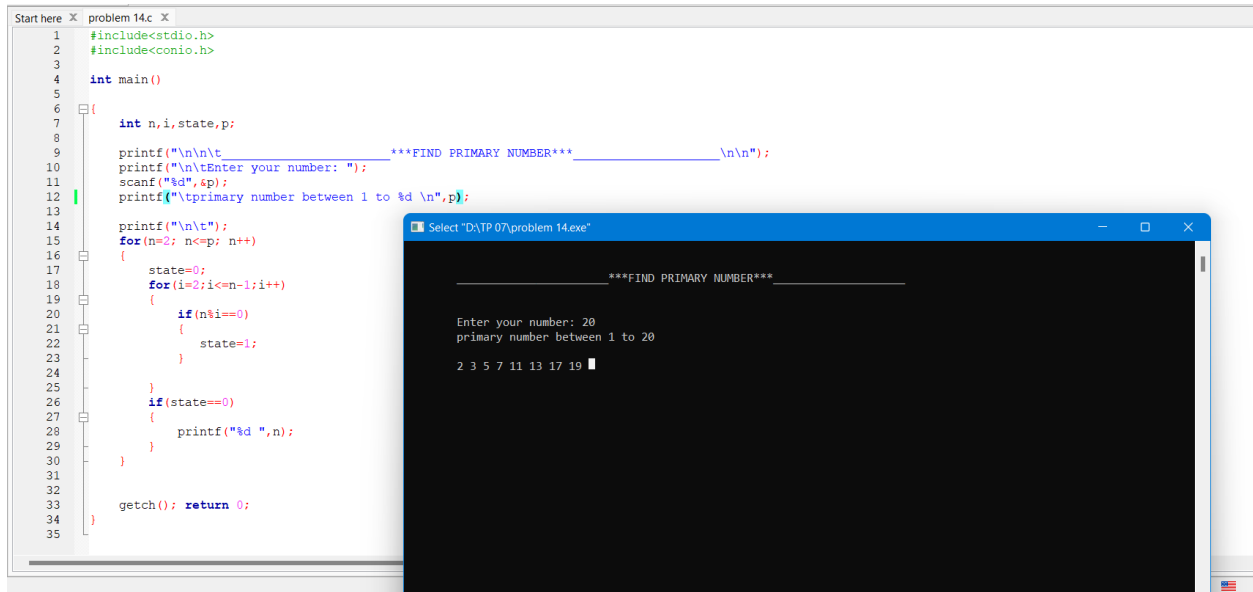
Enter your number: 5
5 is primary number.

Enter your number: 9
9 is not a primary number.

Enter your number: 7
7 is primary number.
```

Problem 14

Write a C program to print all Prime numbers between 1 to n.



The image shows a C program in a text editor and its execution in a command prompt window.

C Program Code:

```
1  #include<stdio.h>
2  #include<conio.h>
3
4  int main()
5  {
6
7      int n,i,state,p;
8
9      printf("\n\n\t\t\t\t\t***FIND PRIMARY NUMBER***\n\n");
10     printf("\n\tEnter your number: ");
11     scanf("%d",&p);
12     printf("\tprimary number between 1 to %d \n",p);
13
14     printf("\n\t");
15     for(n=2; n<=p; n++)
16     {
17         state=0;
18         for(i=2; i<=n-1; i++)
19         {
20             if(n%i==0)
21             {
22                 state=1;
23             }
24         }
25         if(state==0)
26         {
27             printf("%d ",n);
28         }
29     }
30
31
32     getch(); return 0;
33
34 }
35
```

Execution Output:

```
Select "D:\TP 07\problem 14.exe"

***FIND PRIMARY NUMBER***

Enter your number: 20
primary number between 1 to 20

2 3 5 7 11 13 17 19
```

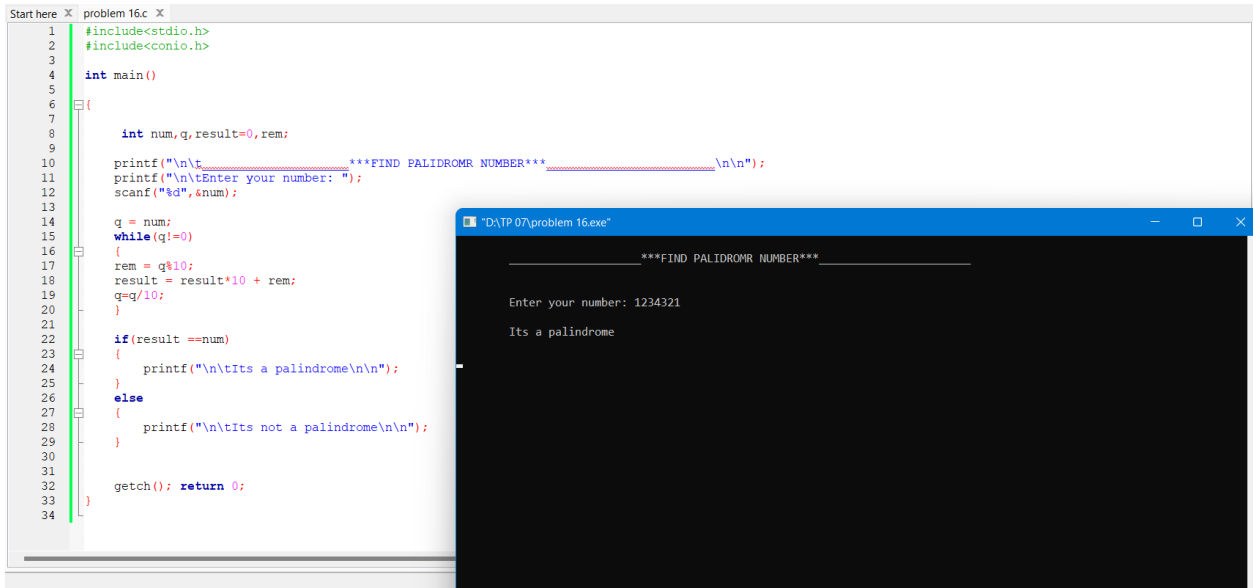

Problem 15

Write a C program to find sum of all prime numbers between 1 to n.

```
5
6 int main()
7 {
8     int n,l,state;
9     long int sum =0;
10
11     printf("\n\t_____SUMATION OF PRIMARY NUMBER_____ \n\n");
12
13     printf("\n\tEnter for n number: ");
14     scanf("%d",&n);
15     printf("\n\tprimary number between 1 to %d \n",n);
16
17     printf("\n\t");
18     for(l=2; l<=n; l=l+1)
19     {
20         int k;
21         state = 0;
22         for(k=2; k<=l; k=k+1)
23         {
24
25             if (l%k==0)
26             {
27                 state = 1;
28             }
29
30
31             if(state==0)
32             {
33                 printf("%d ",l);
34                 sum +=l;
35             }
36         }
37         printf("\n\tSummation: %ld",sum);
38
39         getch(); return 0;
```

Problem 16

Write a C program to check whether a number is palindrome or not.



The image shows a C program in a text editor and its execution in a command prompt window. The program checks if a number is a palindrome by reversing its digits and comparing it to the original number.

```
1 #include<stdio.h>
2 #include<conio.h>
3
4 int main()
5 {
6     int num,q,result=0,rem;
7
8     printf("\n\t***FIND PALIDROMR NUMBER***\n\n");
9     printf("\n\tEnter your number: ");
10    scanf("%d",&num);
11
12    q = num;
13    while(q!=0)
14    {
15        rem = q%10;
16        result = result*10 + rem;
17        q=q/10;
18    }
19
20    if(result ==num)
21    {
22        printf("\n\tIts a palindrome\n\n");
23    }
24    else
25    {
26        printf("\n\tIts not a palindrome\n\n");
27    }
28
29    getch(); return 0;
30 }
```

The execution window shows the following output:

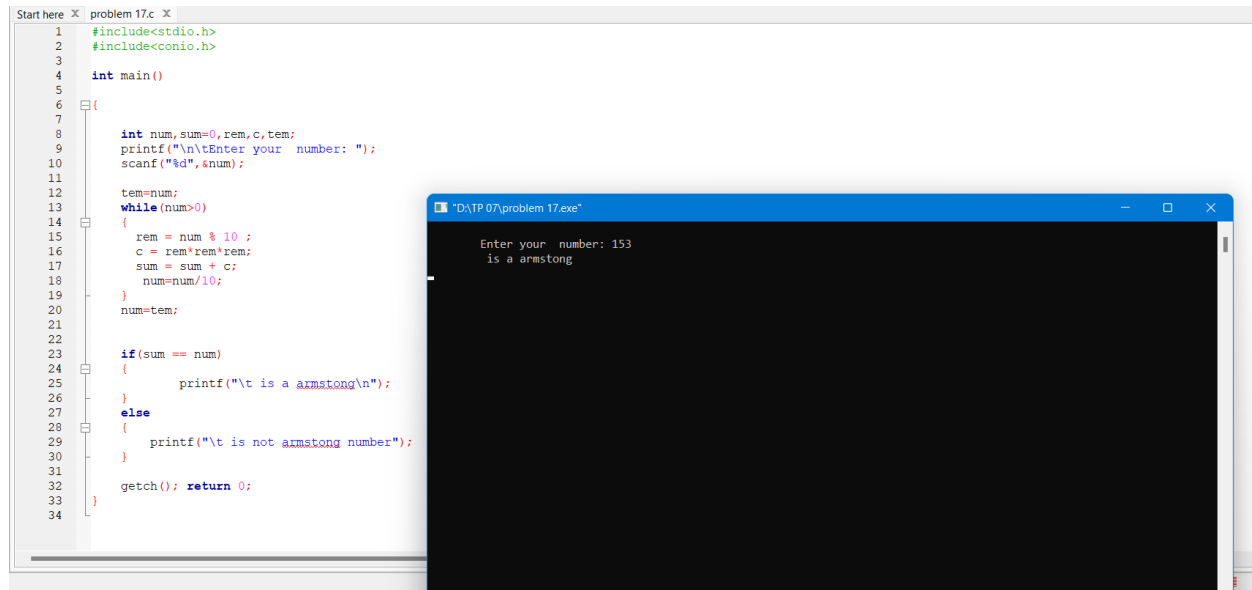
```
***FIND PALIDROMR NUMBER***

Enter your number: 1234321

Its a palindrome
```

Problem 17

Write a C program to check whether a number is palindrome or not.



The image shows a C program in a code editor and its execution in a terminal window. The code is designed to check if a number is an Armstrong number (also known as a narcissistic number). It takes an input number, calculates the sum of its digits raised to the power of the number of digits, and compares it to the original number.

```
1  #include<stdio.h>
2  #include<conio.h>
3
4  int main()
5
6  {
7
8      int num,sum=0,rem,c,tem;
9      printf("\n\tEnter your number: ");
10     scanf("%d",&num);
11
12     tem=num;
13     while(num>0)
14     {
15         rem = num % 10 ;
16         c = rem*rem*rem;
17         sum = sum + c;
18         num=num/10;
19     }
20     num=tem;
21
22
23     if(sum == num)
24     {
25         printf("\t is a armstong\n");
26     }
27     else
28     {
29         printf("\t is not armstong number");
30     }
31
32     getch(); return 0;
33 }
34
```

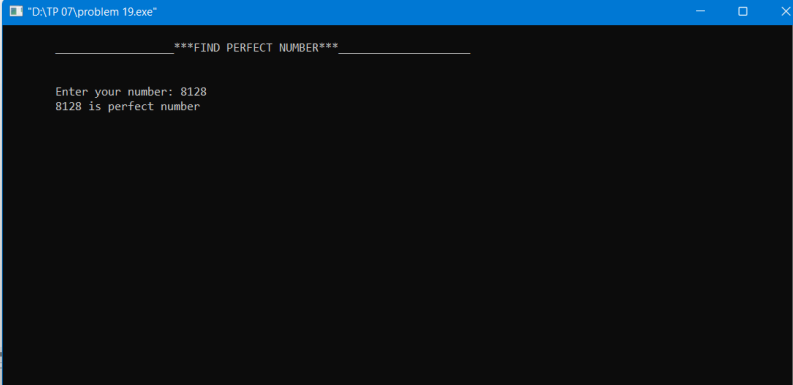
The terminal window shows the program's output for the input 153:

```
Enter your number: 153
is a armstong
```

Problem 19

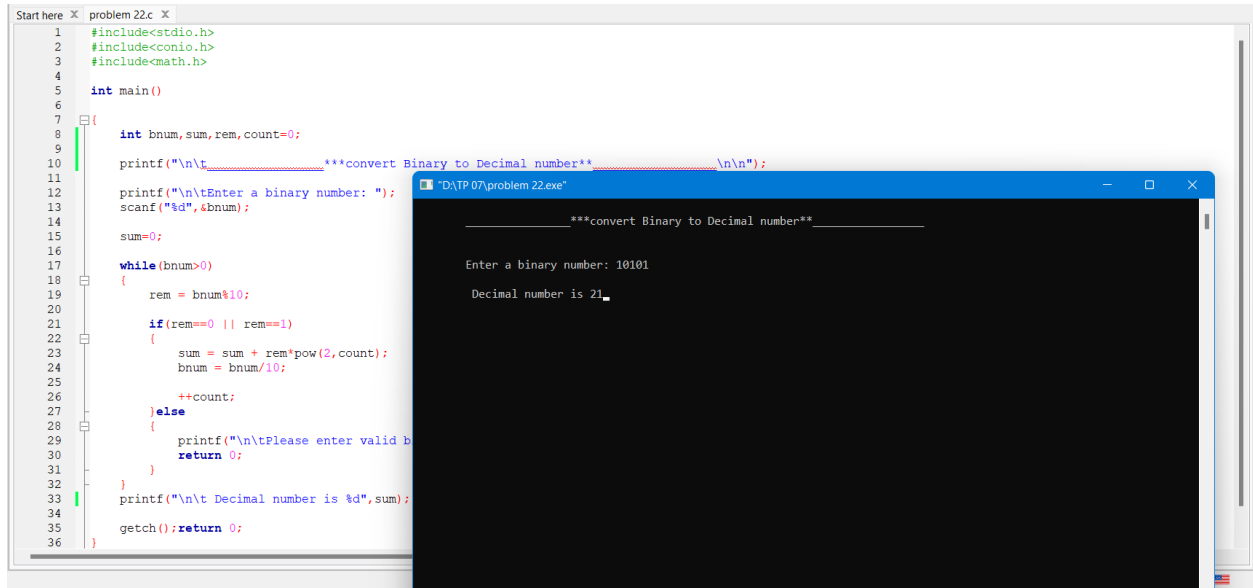
Write a C program to check whether a number is Perfect number or not.

```
1  #include<stdio.h>
2  #include<conio.h>
3
4  int main()
5  {
6
7
8
9      int num,n,i,sum=0;
10     printf("\n\t*****FIND PERFECT NUMBER*****\n\n");
11     printf("\n\tEnter your number: ");
12     scanf("%d",&num);
13
14     n=num;
15     for(i=1; i<=(n-1); i++)
16     {
17         if(n%i==0)
18         {
19             sum= sum+i;
20         }
21     }
22     if(sum==num)
23     {
24         printf("\t%d is perfect number",num);
25     }
26     else
27     {
28         printf("\t%d is not perfect number",num);
29     }
30
31
32     getch(); return 0;
33
34
35 }
```



Problem 22

Write a C program to convert Binary to Decimal number system.



The image shows a C program in a code editor and its execution in a terminal window. The code is as follows:

```
1 #include<stdio.h>
2 #include<conio.h>
3 #include<math.h>
4
5 int main()
6 {
7     int bnum, sum, rem, count=0;
8
9     printf("\n\t_____**convert Binary to Decimal number**_____\\n\\n");
10
11     printf("\\n\\tEnter a binary number: ");
12     scanf("%d",&bnum);
13
14     sum=0;
15
16     while(bnum>0)
17     {
18         rem = bnum%10;
19
20         if(rem==0 || rem==1)
21         {
22             sum = sum + rem*pow(2,count);
23             bnum = bnum/10;
24
25             ++count;
26         }
27         else
28         {
29             printf("\\n\\tPlease enter valid binary number\\n");
30             return 0;
31         }
32     }
33     printf("\\n\\t Decimal number is %d",sum);
34
35     getch();return 0;
36 }
```

The terminal window shows the program's output:

```
_____**convert Binary to Decimal number**_____
Enter a binary number: 10101
Decimal number is 21_
```

Thank you!!!