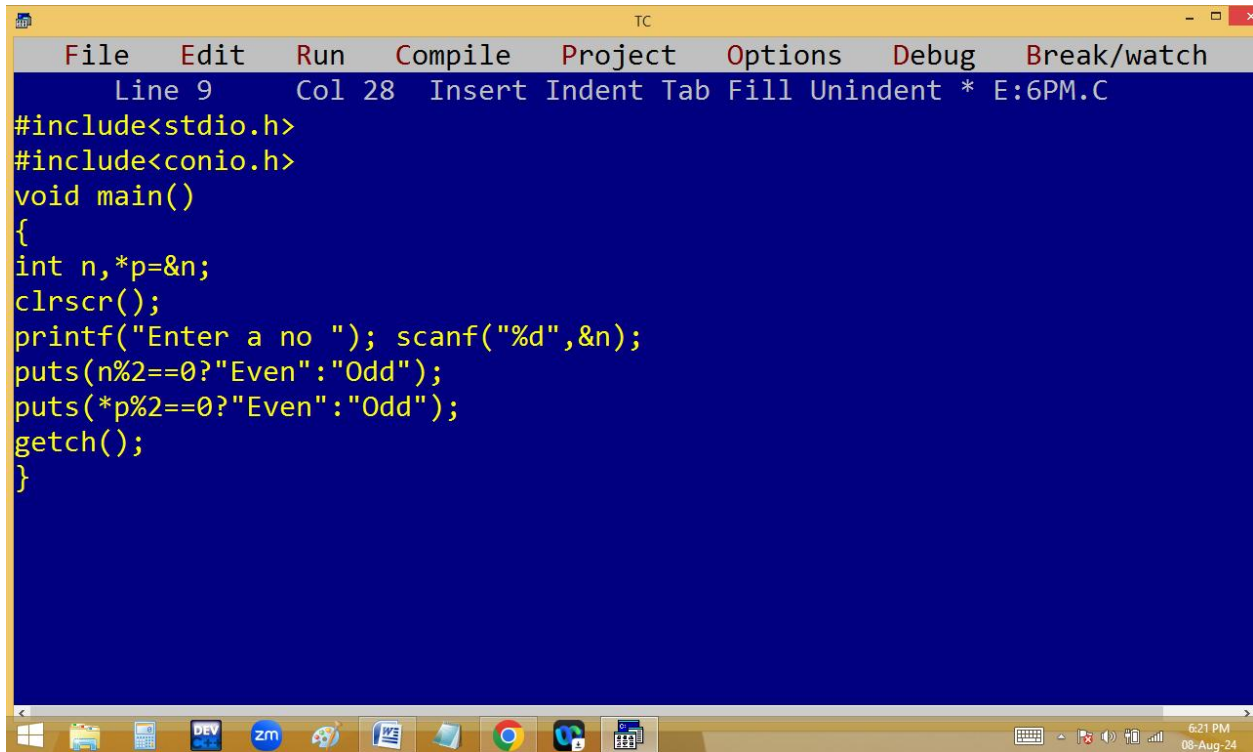
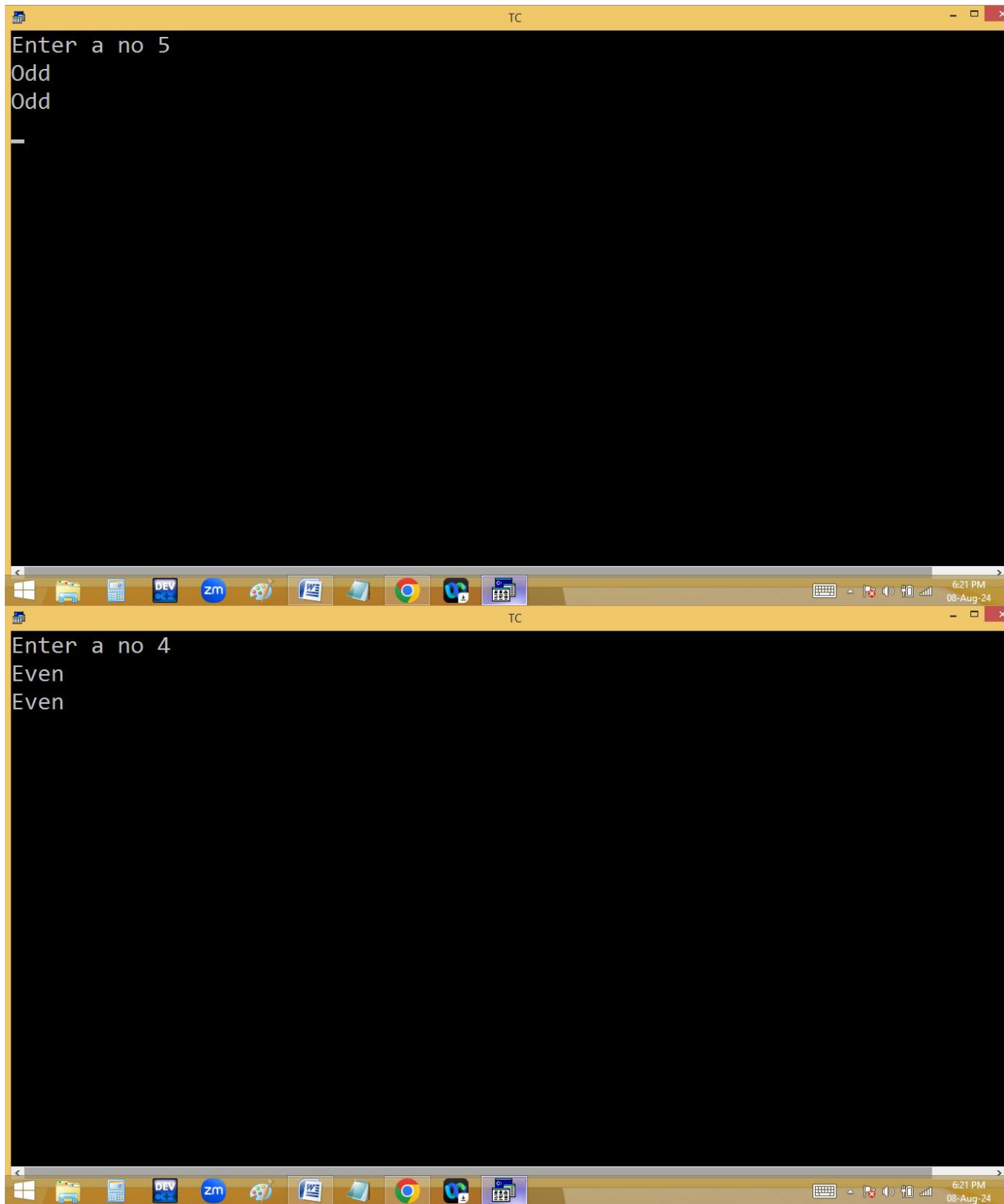


Finding even/odd using pointer:



```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 9 Col 28 Insert Indent Tab Fill Unindent * E:6PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int n,*p=&n;
clrscr();
printf("Enter a no "); scanf("%d",&n);
puts(n%2==0?"Even":"Odd");
puts(*p%2==0?"Even":"Odd");
getch();
}
```

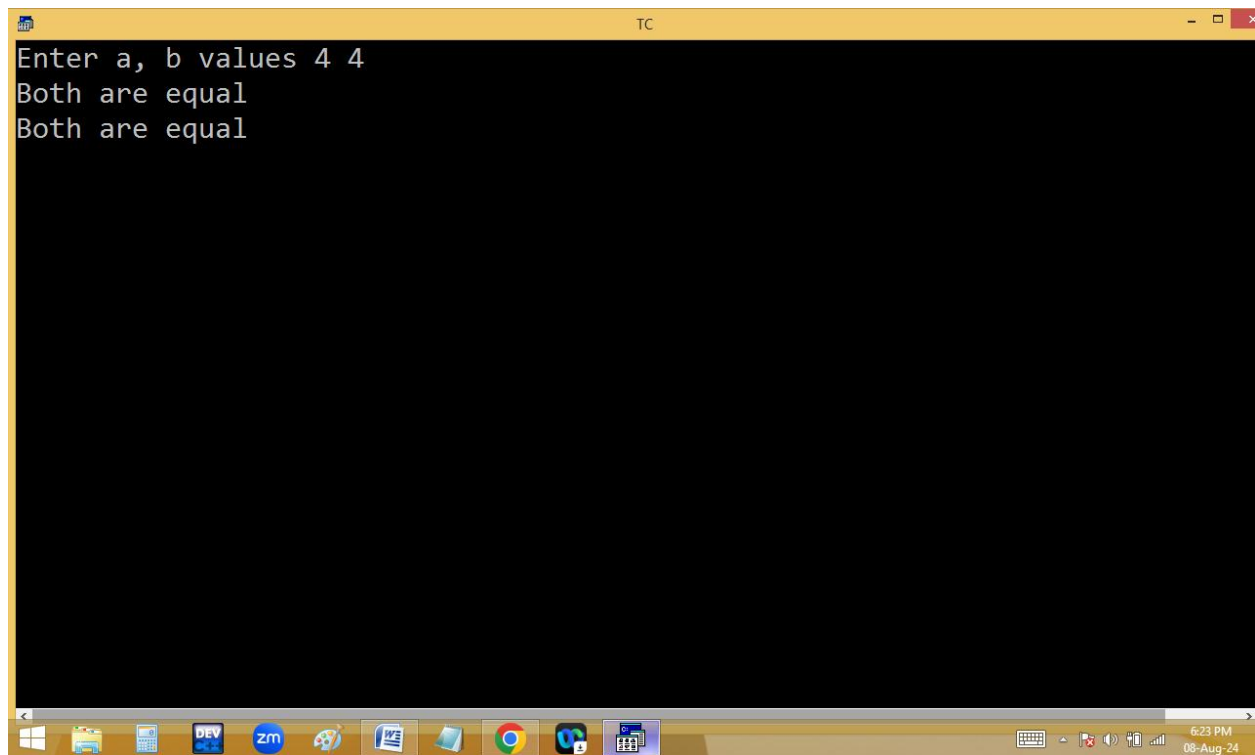
The screenshot shows a Turbo C++ IDE window titled 'TC'. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates 'Line 9 Col 28 Insert Indent Tab Fill Unindent * E:6PM.C'. The main editing area has a blue background and contains the following C code: `#include<stdio.h>`, `#include<conio.h>`, `void main()`, `{`, `int n,*p=&n;`, `clrscr();`, `printf("Enter a no "); scanf("%d",&n);`, `puts(n%2==0?"Even":"Odd");`, `puts(*p%2==0?"Even":"Odd");`, `getch();`, and `}`. The Windows taskbar is visible at the bottom with various application icons and a system clock showing 6:21 PM on 08-Aug-24.



Finding max in 2 no's using pointer:

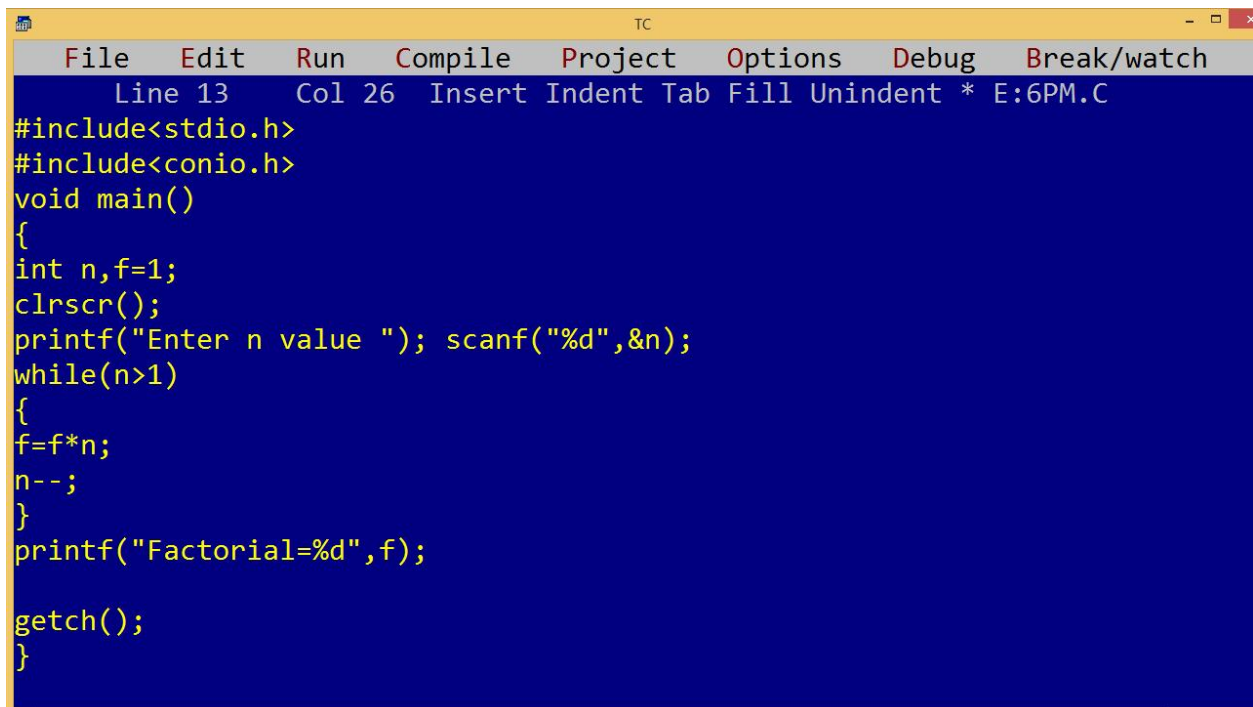
```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 11 Col 56 Insert Indent Tab Fill Unindent * E:6PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b,*p,*q;
clrscr();
p=&a;
q=&b;
printf("Enter a, b values "); scanf("%d %d",&a,&b);
puts(a>b?"a is big":b>a?"b is big":"Both are equal");
puts(*p>*q?"a is big":*q>*p?"b is big":"Both are equal");
getch();
}
```

```
TC
Enter a, b values 1 2
b is big
b is big
_
```



```
Enter a, b values 4 4
Both are equal
Both are equal
```

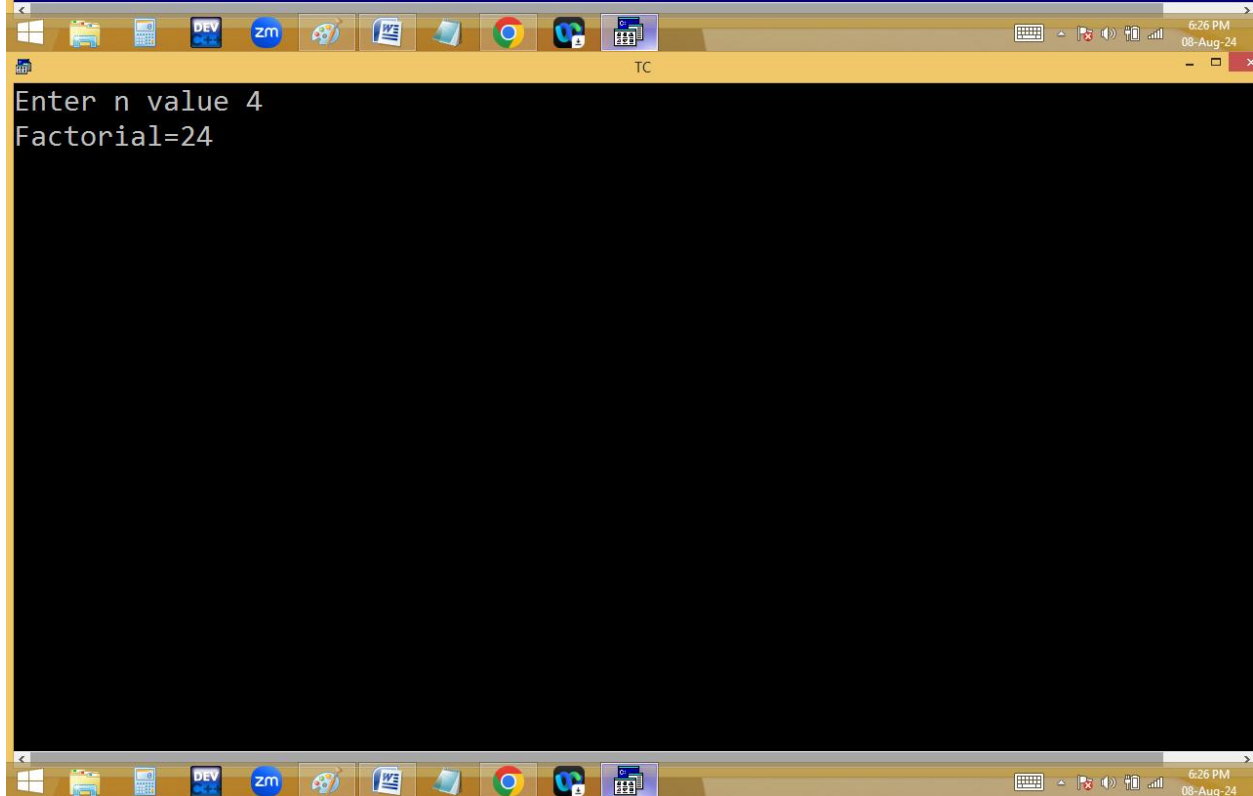
Finding factorial using pointer:



The screenshot shows the Turbo C++ (TC) IDE with a menu bar (File, Edit, Run, Compile, Project, Options, Debug, Break/watch) and a status bar (Line 13, Col 26, Insert, Indent, Tab, Fill, Unindent, *, E:6PM.C). The main editing area has a blue background and contains the following C code:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int n,f=1;
clrscr();
printf("Enter n value "); scanf("%d",&n);
while(n>1)
{
f=f*n;
n--;
}
printf("Factorial=%d",f);

getch();
}
```



The screenshot shows the Turbo C++ (TC) IDE with the same menu bar and status bar. The main editing area has a black background and displays the output of the program:

```
Enter n value 4
Factorial=24
```

TC

File Edit Run Compile Project Options Debug Break/watch

Line 11 Col 5 Insert Indent Tab Fill Unindent * E:6PM.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int n,f=1,*p=&n;
clrscr();
printf("Enter n value "); scanf("%d",&n);
while(*p>1)
{
f=f* *p;
(*p)--;
}
printf("Factorial=%d",f);

getch();
}
```

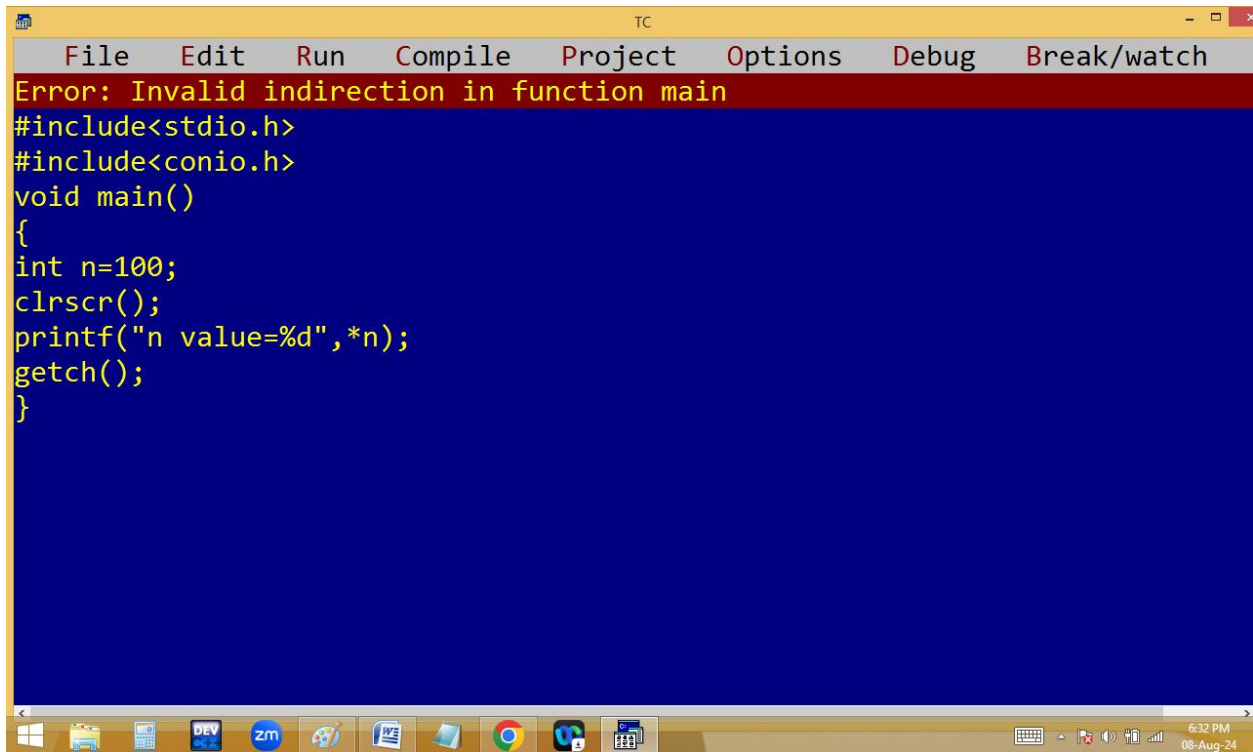
TC

```
Enter n value 4
Factorial=24
```

```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 16 Col 38 Insert Indent Tab Fill Unindent * E:6PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int n,f=1,*p=&n;
clrscr();
printf("Enter n value "); scanf("%d",&n);
while(*p>1)
{
f=f* *p;
--*p;
}
printf("Factorial=%d",f);
getch();
}
/* always * got the least priority */
```

```
TC
Enter n value 4
Factorial=24_
```

Finding a normal variable value using pointer mechanism:



The screenshot shows the Turbo C++ (TC) IDE interface. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. A red error message banner at the top reads "Error: Invalid indirection in function main". The code editor contains the following C code:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int n=100;
clrscr();
printf("n value=%d",*n);
getch();
}
```

The Windows taskbar at the bottom shows various application icons and the system clock indicating 6:32 PM on 08-Aug-24.

TC

File Edit Run Compile Project Options Debug Break/watch

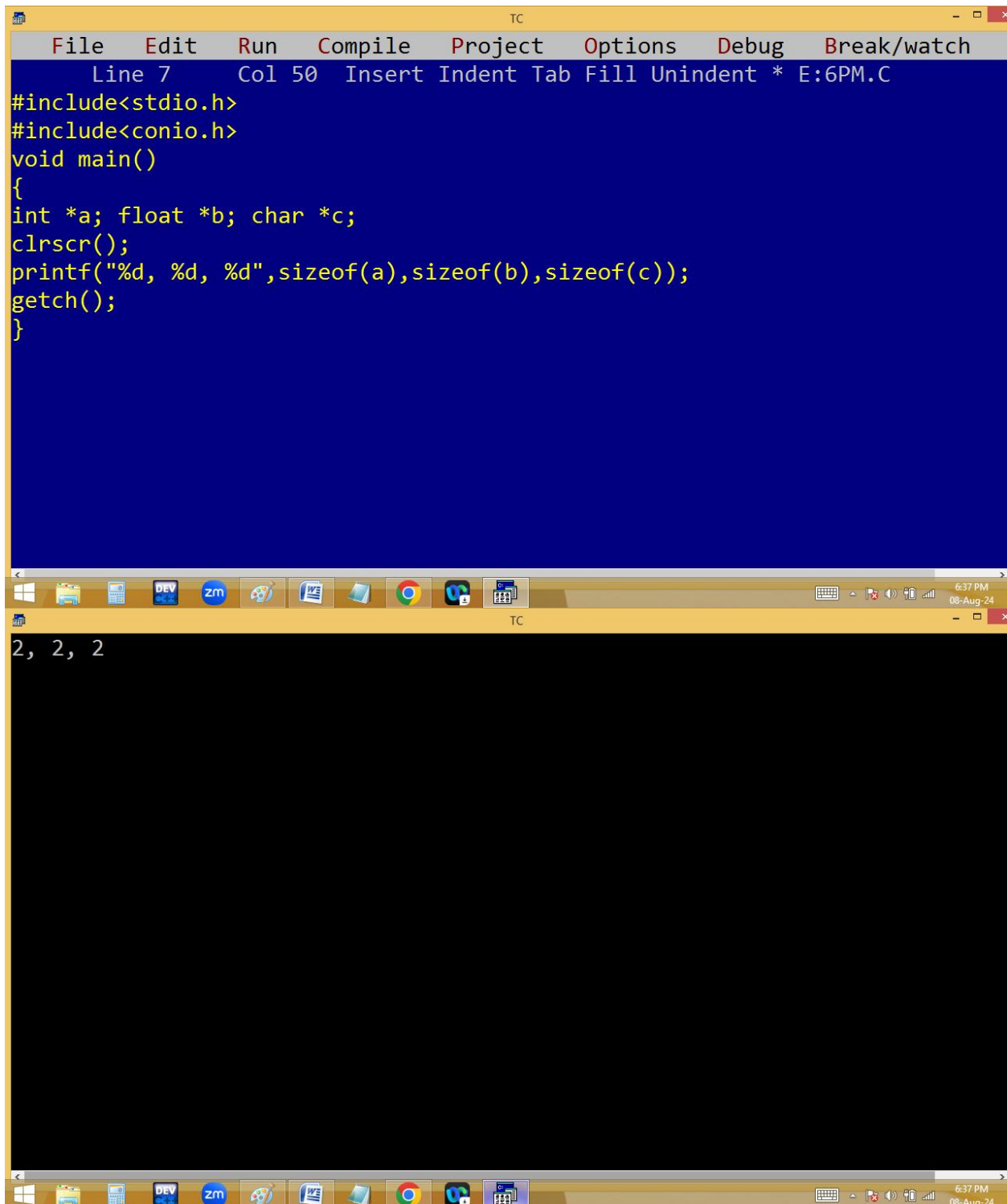
Line 7 Col 23 Insert Indent Tab Fill Unindent * E:6PM.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int n=100;
clrscr();
printf("n value=%d",*&n);
getch();
}
```

TC

```
n value=100_
```

Finding pointer size: Any type of pointer it stores only the base address and address always unsigned int. Due to this pointer take 2 / 4 / 8 bytes in 16 / 32 / 64 bit compilers.

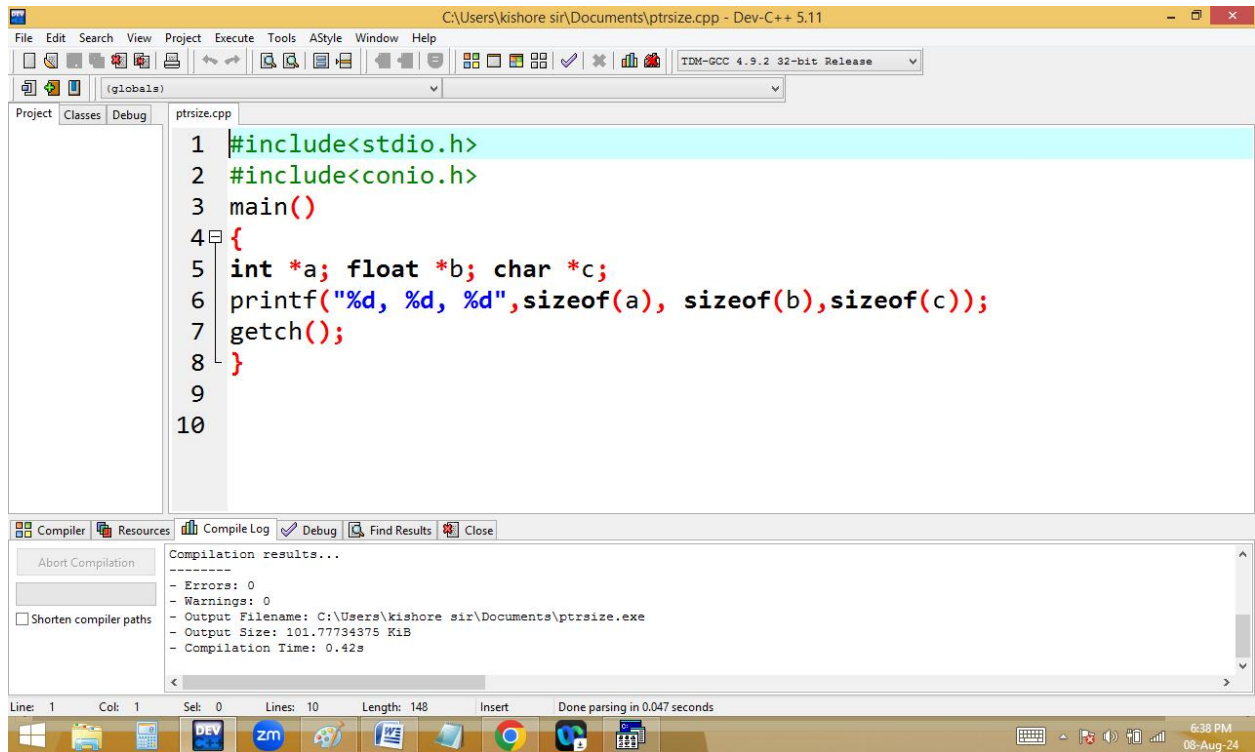


The screenshot shows a Turbo C++ (TC) IDE window. The top menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. Below the menu bar, the status bar shows 'Line 7 Col 50 Insert Indent Tab Fill Unindent * E:6PM.C'. The main editing area has a blue background and contains the following C code:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int *a; float *b; char *c;
clrscr();
printf("%d, %d, %d",sizeof(a),sizeof(b),sizeof(c));
getch();
}
```

Below the code editor, there is a black output window. The first line of the output is '2, 2, 2', which represents the sizes of the pointer variables a, b, and c respectively. The Windows taskbar at the bottom shows various icons including the Start button, File Explorer, DEV C++, ZM, and others. The system clock in the bottom right corner indicates 6:37 PM on 08-Aug-24.

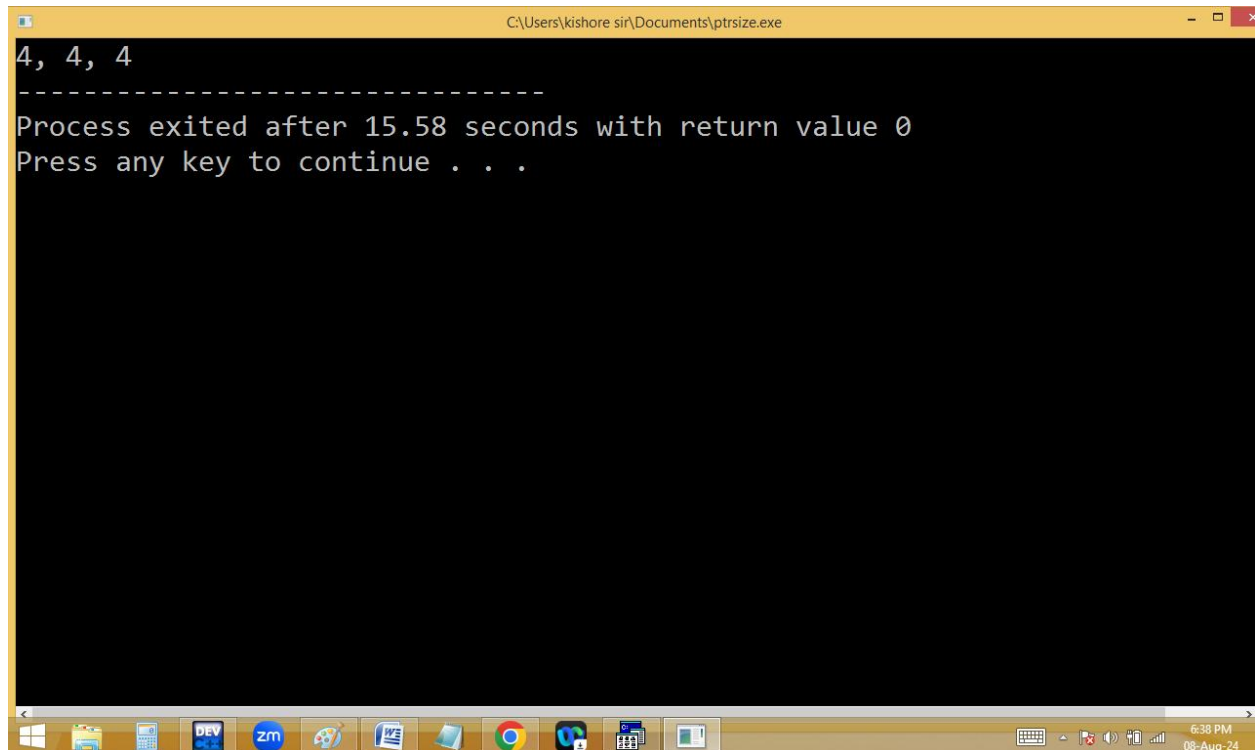
In dev c++:



```
1 #include<stdio.h>
2 #include<conio.h>
3 main()
4 {
5     int *a; float *b; char *c;
6     printf("%d, %d, %d", sizeof(a), sizeof(b), sizeof(c));
7     getch();
8 }
9
10
```

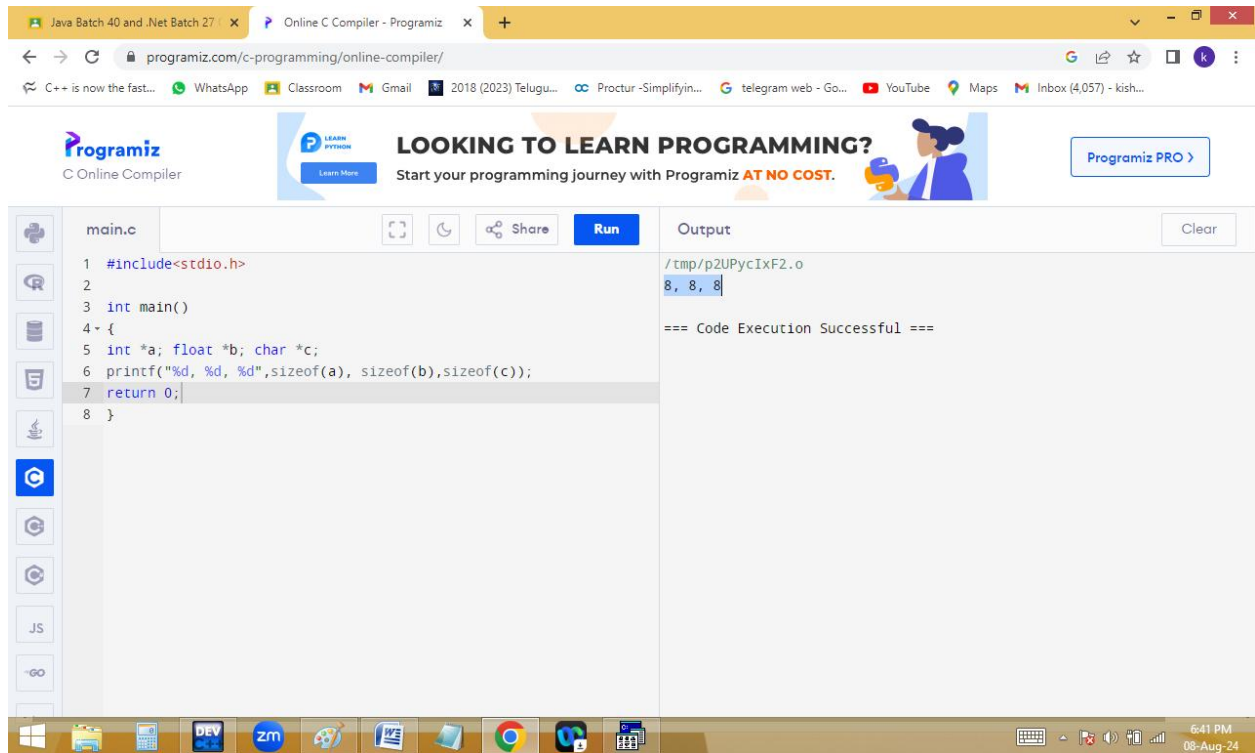
Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\kishore sir\Documents\ptrsize.exe
- Output Size: 101.77784375 KiB
- Compilation Time: 0.42s



```
4, 4, 4
-----
Process exited after 15.58 seconds with return value 0
Press any key to continue . . .
```

In online compiler:



The screenshot shows the Programiz Online C Compiler interface. The code editor contains the following C code:

```
1 #include<stdio.h>
2
3 int main()
4 {
5     int *a; float *b; char *c;
6     printf("%d, %d, %d", sizeof(a), sizeof(b), sizeof(c));
7     return 0;
8 }
```

The output window displays the following text:

```
/tmp/p2UPycIxF2.o
8, 8, 8
=== Code Execution Successful ===
```

Pointer compatibility: pointer stores only the same type of variable address. When we are trying to store different type of address, it gives garbage or runtime error.

TC

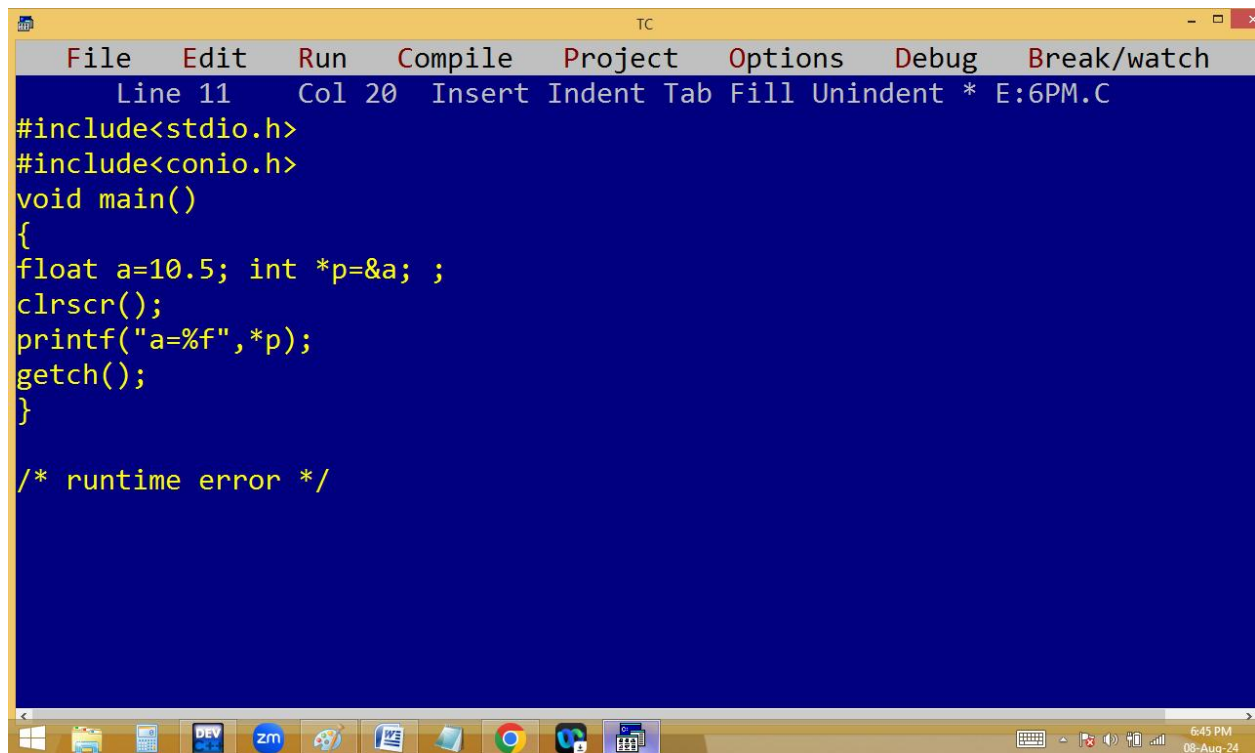
File Edit Run Compile Project Options Debug Break/watch

Line 8 Col 1 Insert Indent Tab Fill Unindent * E:6PM.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a=100; float *p=&a; ;
clrscr();
printf("a=%d",*p);
getch();
}
```

TC

```
a=0
```



The screenshot shows a Turbo C++ (TC) IDE window. The title bar reads "TC". The menu bar includes "File", "Edit", "Run", "Compile", "Project", "Options", "Debug", and "Break/watch". The status bar at the top indicates "Line 11", "Col 20", and "Insert Indent Tab Fill Unindent * E:6PM.C". The main editing area has a blue background and contains the following C code:

```
#include<stdio.h>
#include<conio.h>
void main()
{
float a=10.5; int *p=&a; ;
clrscr();
printf("a=%f",*p);
getch();
}

/* runtime error */
```

The Windows taskbar is visible at the bottom, showing icons for various applications and the system clock indicating 6:45 PM on 08-Aug-24.

Double pointer / pointer to pointer: The pointer which stores the address of another pointer is called double pointer. They are used to handle dynamic multi dimensional array.

```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 5 Col 30 Insert Indent Tab Fill Unindent * E:6PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a=10, *p=&a, **q=&p, ***r=&q ;
clrscr();
printf("%d, %d, %d, %d",a,*p,**q, ***r);
getch();
}
```

```
TC
10, 10, 10, 10_
```

variable	stack value	address
r	65504	65506
q	65502	65504
p	65500	65502
a	100	65500

```
printf("%d", ***r);
```

r value ==> 65504
 *65504 ==> value at 65504 ==> 65502
 *65502 ==> value at 65502 ==> 65500
 *65500 ==> value at 65500 ==> 100

Array of pointer:


```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 8 Col 40 Insert Indent Tab Fill Unindent * E:6PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a=10, b=25, c=18, *p[3],i;
clrscr();
p[0]=&a; p[1]=&b; p[2]=&c;
for(i=0;i<3;i++)printf("%c=%d\n",97+i, *p[i]);
getch();
}
```

```
TC
a=10
b=25
c=18
_
```

Pointer to array:

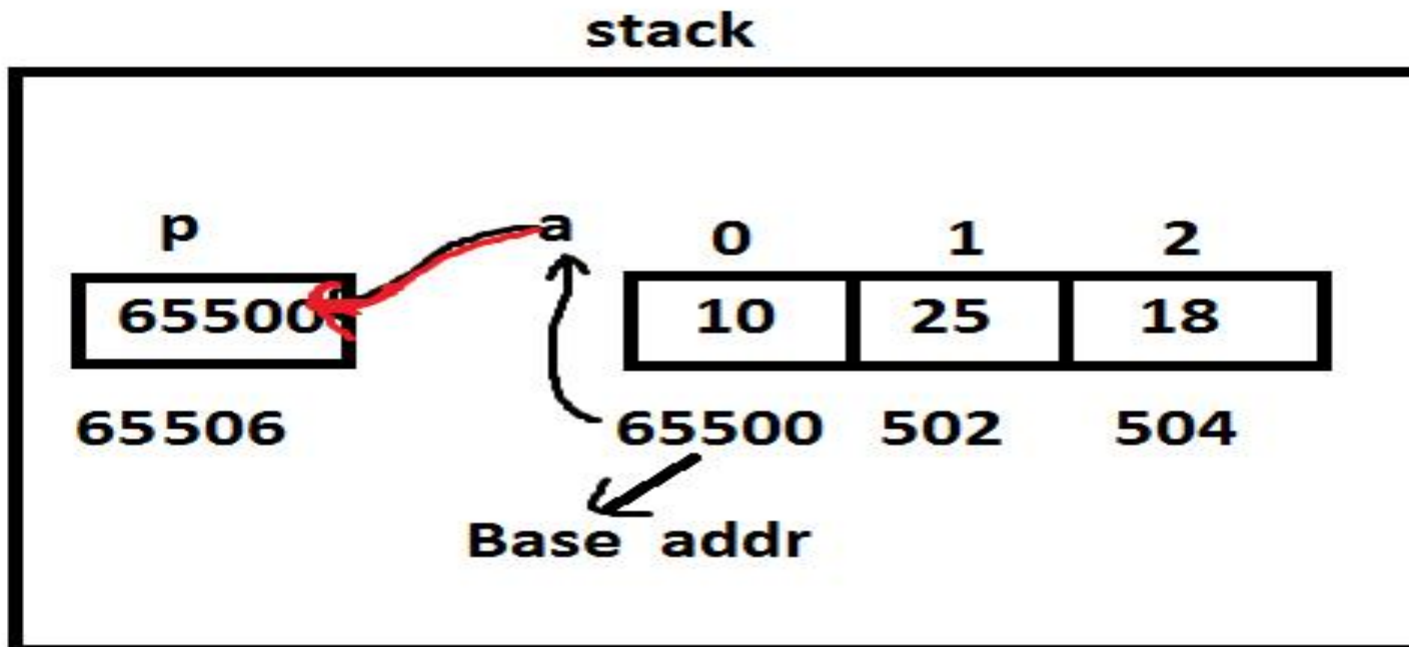
Array is implicit pointer. Due to this it holds the base cell addr [0 cell addr] implicitly. By assigning the array name or 0 cell addr to the pointer, we can handle array elements using the following syntax.

$*(ptrvariable + offset/index * sizeof(variable));$

Eg:

```
int a[3]={10, 25, 18}, *p, i;
```

```
p = a ; or p = &a[0]; or p = &a;
```



```
for(i=0;i<3;i++)
```

```
printf("%4d", *(p+i));
```

Here $*(p+i)$ meaning is:

p is 65500

1. $*(p+0*2) \rightarrow *65500 \rightarrow \text{value at } 65500 \rightarrow 10$
2. $*(p+1*2) \rightarrow *65502 \rightarrow \text{value at } 65502 \rightarrow 25$

3. $*(p+2*2) \rightarrow *65504 \rightarrow \text{value at } 65504 \rightarrow 18$

Note: Here 2 is int size.

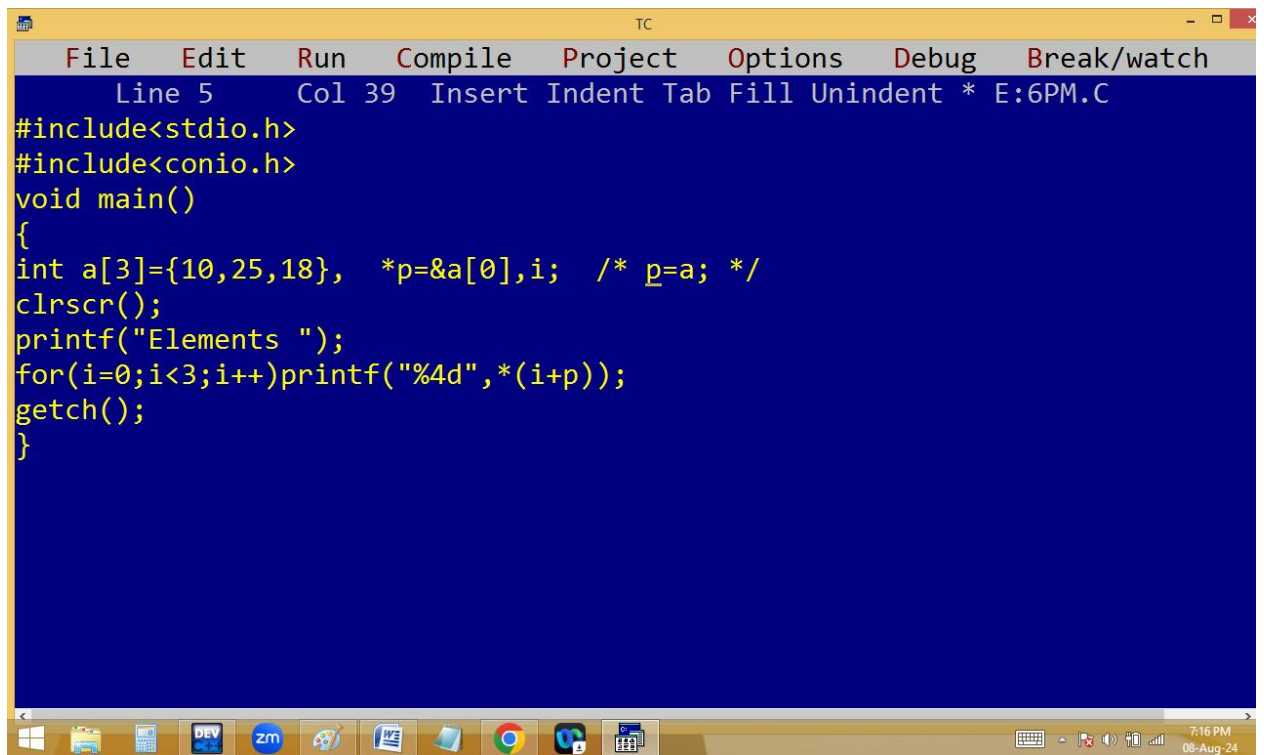
Eg:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int *p, a[3]={10,25,18}, i;
clrscr();
p = a; /* p=&a[0]; or p=&a; */
printf("Elements are: ");
for(i=0;i<3;i++)
printf("%4d",*(p+i));
getch();
}
```

Output: Elements are: 10 25 18

Note: We can access array elements using array / pointer in following ways.

a[i] / i[a] / p[i] / i[p] / *(p+i) / *(a+i) / *(i+p) / *(i+a)

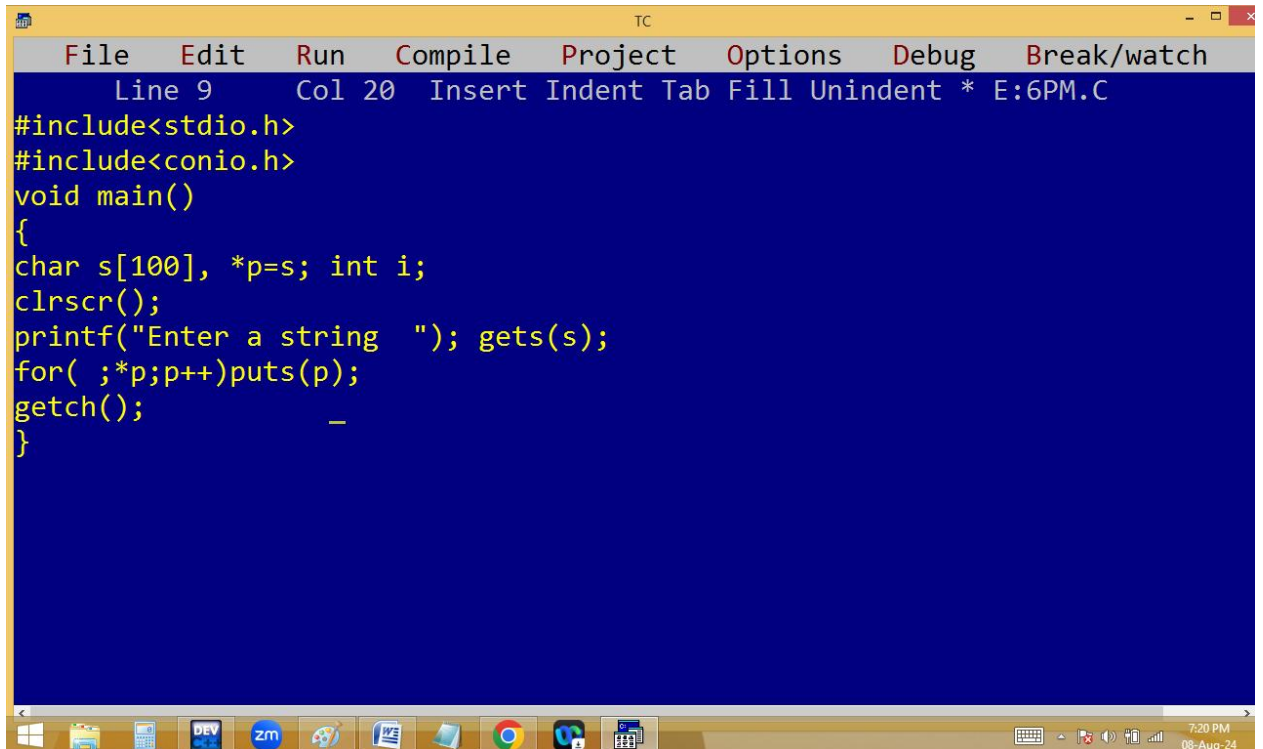


```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 5 Col 39 Insert Indent Tab Fill Unindent * E:6PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a[3]={10,25,18}, *p=&a[0],i; /* p=a; */
clrscr();
printf("Elements ");
for(i=0;i<3;i++)printf("%4d",*(i+p));
getch();
}
```

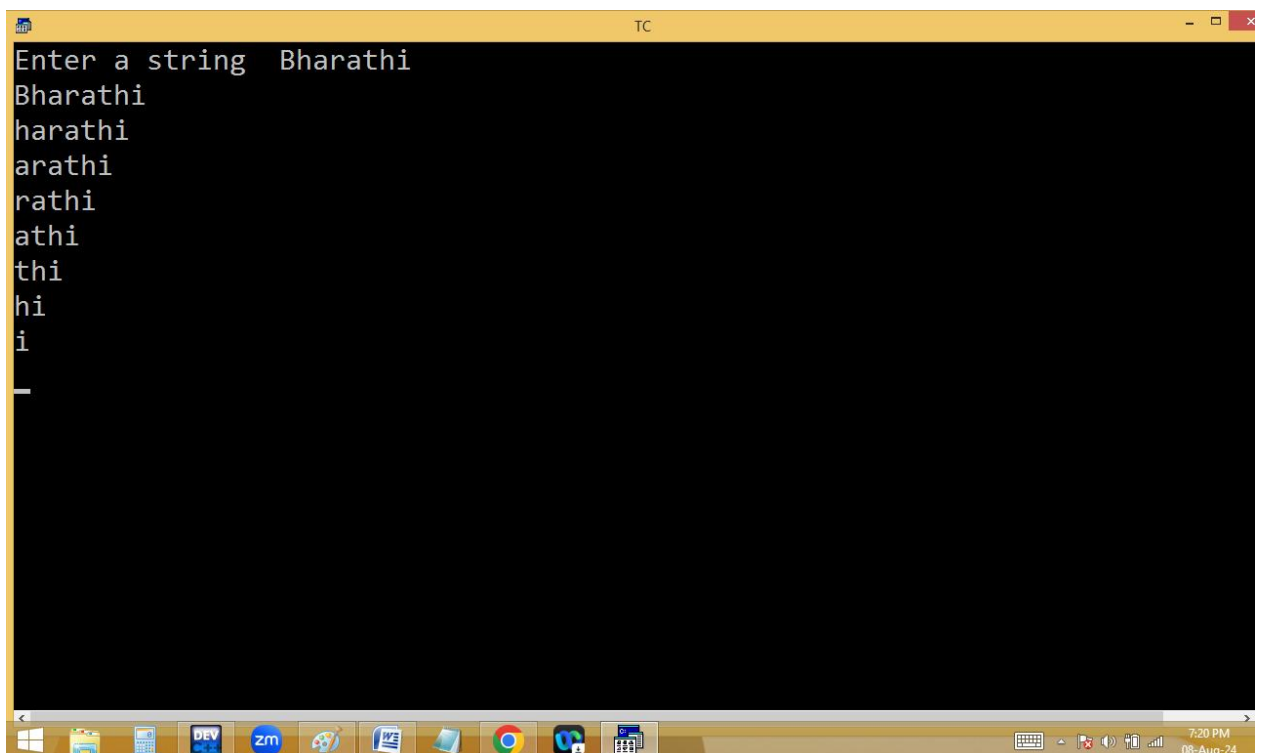


```
TC
Elements 10 25 18
```

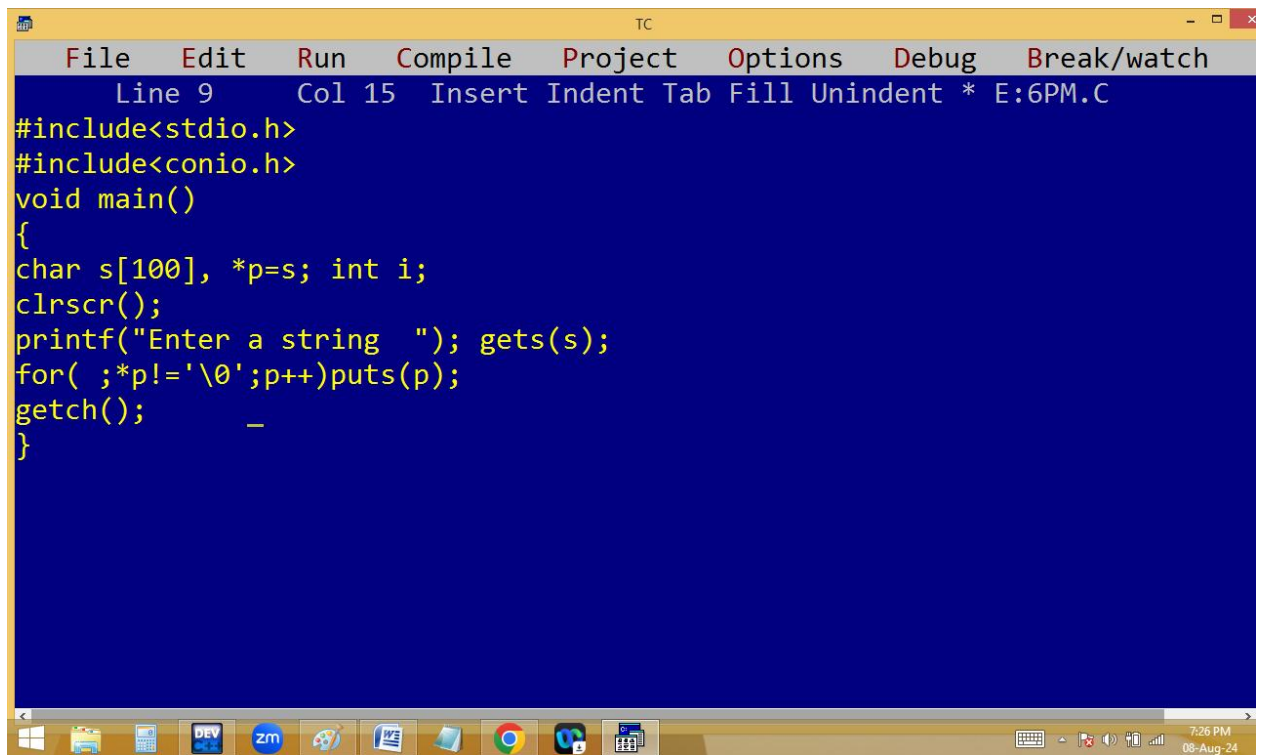
Pointer to string:



```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 9 Col 20 Insert Indent Tab Fill Unindent * E:6PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
char s[100], *p=s; int i;
clrscr();
printf("Enter a string "); gets(s);
for( ;*p;p++)puts(p);
getch();
}
```



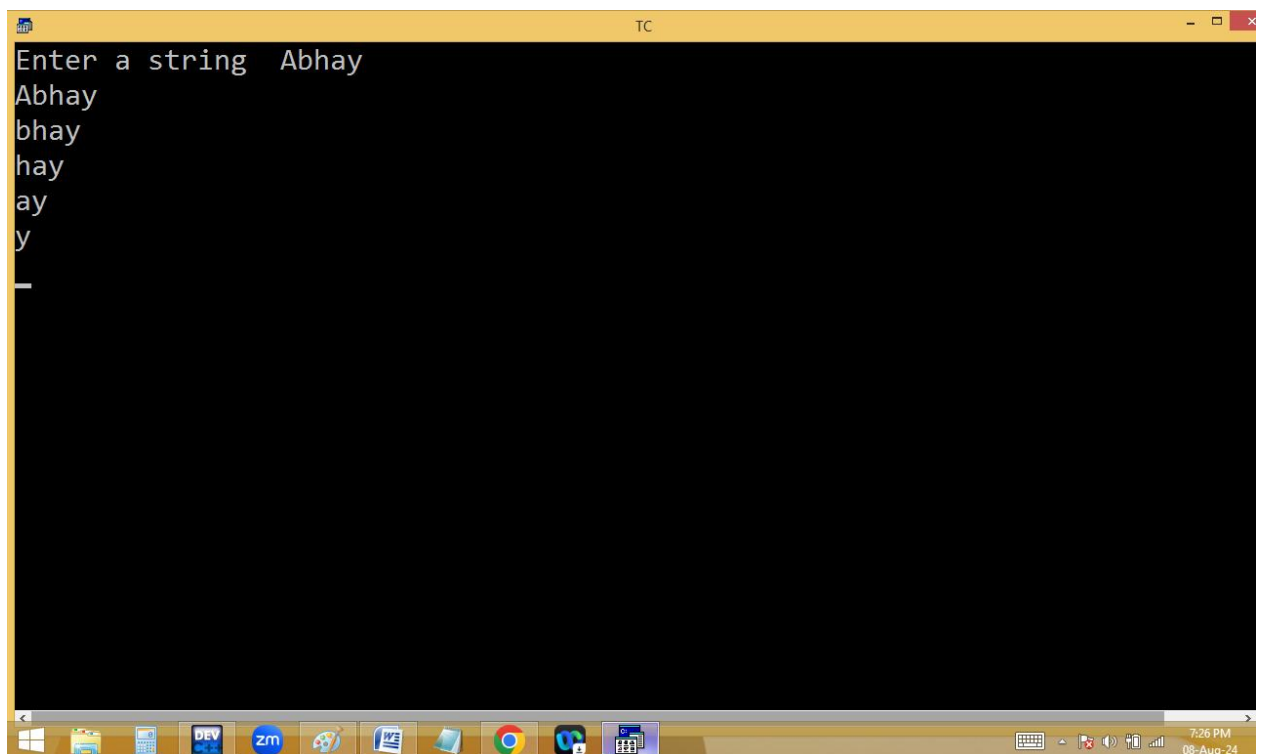
```
TC
Enter a string Bharathi
Bharathi
harathi
arathi
rathi
athi
thi
hi
i
_
```



The screenshot shows the Turbo C++ (TC) IDE with a menu bar (File, Edit, Run, Compile, Project, Options, Debug, Break/watch) and a status bar (Line 9, Col 15, Insert, Indent, Tab, Fill, Unindent, *, E:6PM.C). The code in the editor is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
char s[100], *p=s; int i;
clrscr();
printf("Enter a string "); gets(s);
for( ;*p!='\0';p++)puts(p);
getch();
}
```

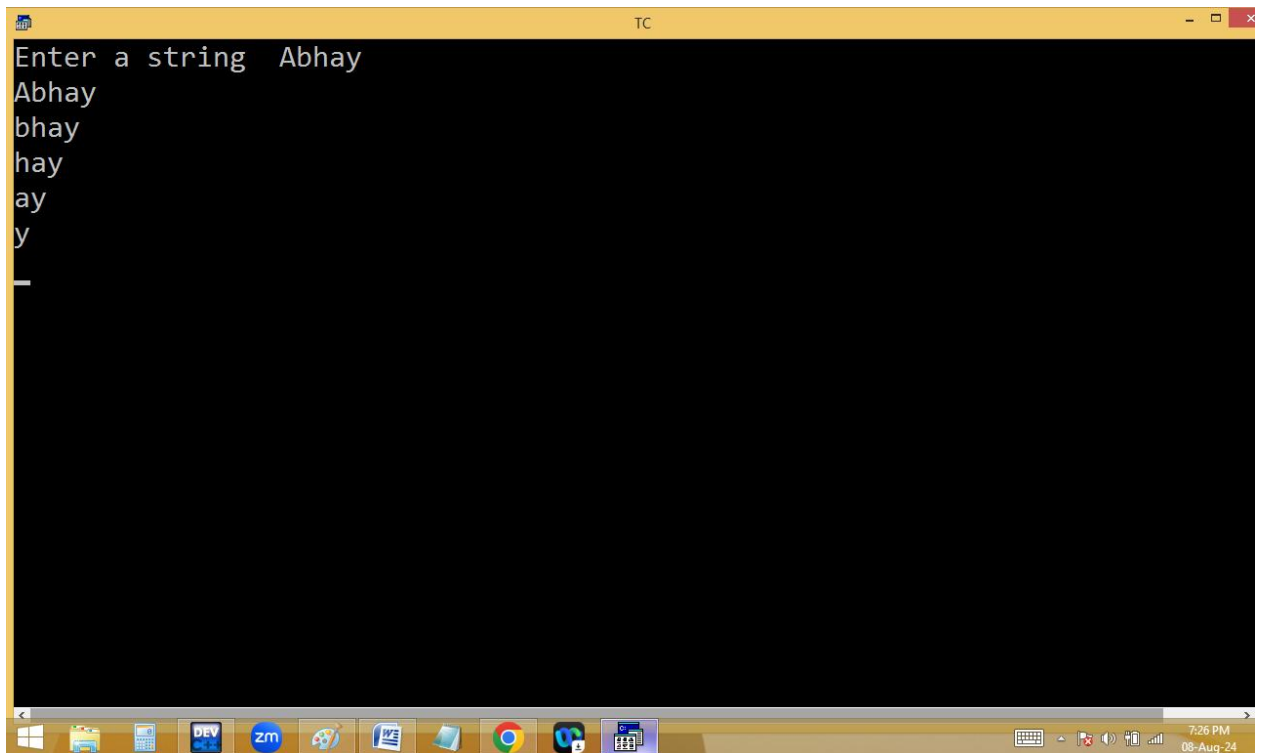
The Windows taskbar at the bottom shows icons for File Explorer, Calculator, DEV C++, Zoom, and other applications, with a system clock indicating 7:26 PM on 08-Aug-24.



The screenshot shows the Turbo C++ (TC) IDE after the program has been executed. The output window displays the following text:

```
Enter a string  Abhay
Abhay
bhay
hay
ay
y
-
```

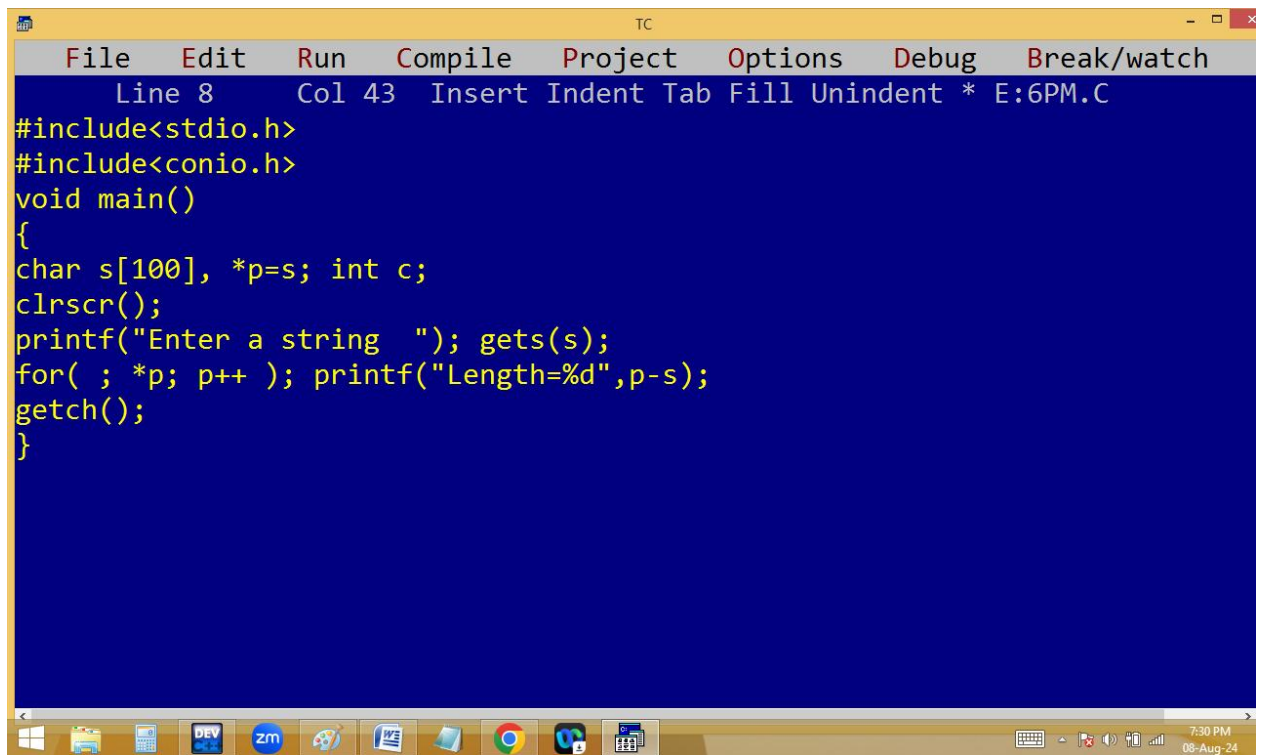
The Windows taskbar at the bottom is identical to the first screenshot, showing the same set of icons and system clock.



The image shows a screenshot of a Turbo C++ (TC) window. The window has a yellow title bar with the text "TC" in the center. The main area is black and contains the following text: "Enter a string Abhay", "Abhay", "bhay", "hay", "ay", "y", and a horizontal line. The Windows taskbar is visible at the bottom, showing various icons including the Start button, File Explorer, Calculator, DEV C++, Zoom, Paint, Word, and Google Chrome. The system tray on the right shows the date and time as "7:26 PM 08-Aug-24".

```
Enter a string Abhay
Abhay
bhay
hay
ay
y
_
```

Find the string length using pointers only:



The image shows a screenshot of a Turbo C++ (TC) IDE window. The title bar at the top reads "TC". Below it is a menu bar with the following options: File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. A status bar just below the menu bar displays "Line 8", "Col 43", and "Insert Indent Tab Fill Unindent * E:6PM.C". The main editing area has a dark blue background and contains the following C code:

```
#include<stdio.h>
#include<conio.h>
void main()
{
char s[100], *p=s; int c;
clrscr();
printf("Enter a string "); gets(s);
for( ; *p; p++ ); printf("Length=%d",p-s);
getch();
}
```

At the bottom of the window is a Windows taskbar. It includes the Start button, several application icons (such as File Explorer, Calculator, DEV, and ZOOM), and a system tray on the right showing the time as 7:30 PM and the date as 08-Aug-24.

