CHAPTER - 9
ARRAYS, STRINGS AND POINTERS

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POINTERS TO ARRAYS

POINTERS AND ARRAYS

CHARACTER STRING WITH POINTERS

ARRAYS, STRINGS AND POINTERS

POINTER TO ARRAYS

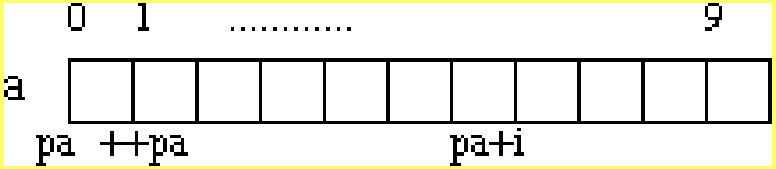
```
/* A program to display the contents of array using pointer*/
void main()
{
        int a[100];
        int i, j = 0, n;
        printf ("\nEnter the elements of the array\n");
        scanf ("%d", &n);
        printf ("Enter the array elements");
       for (i = 0; i <  n; i++)
           scanf ("%d", &a[i]);
      printf ("Array element are");
      for (ptr = a; ptr < (a + n); ptr++)
           printf ("Value of a[%d] = %d stored at address %u",
                                                    j ++, *ptr, ptr);
}
```

ARRAYS, STRINGS AND POINTERS

POINTERS AND ARRAYS

- **Pointers and arrays are very closely linked in C.**
- **Array elements arranged in consecutive memory locations.**

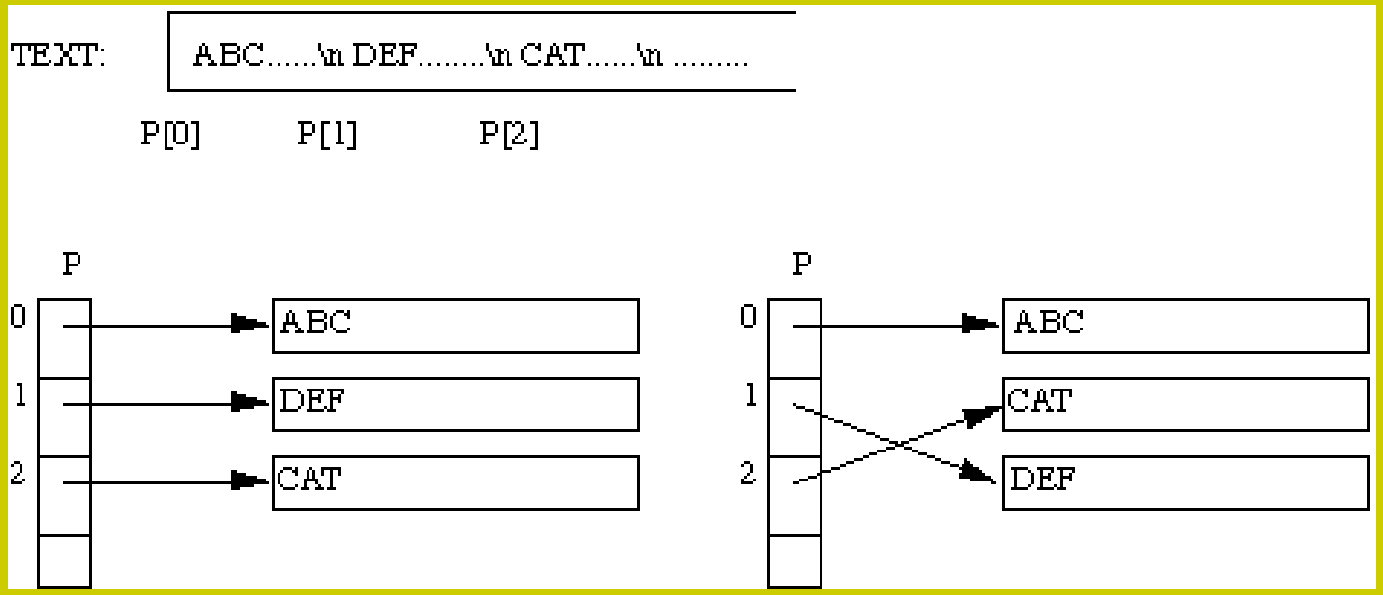
```
int a[10], x;
int *pa;

pa = &a[0];  /* pa pointer to address of a[0] */
x = *pa;     /* x = contents of pa (a[0] in this case) */
```



ARRAYS, STRINGS AND POINTERS

ARRAYS OF POINTERS

- **Arrays of Pointers are a data representation that will cope efficiently and conveniently with variable length text lines**



ARRAYS, STRINGS AND POINTERS

CHARACTER STRINGS WITH POINTERS

- The *suit* [4] declaration indicates an array of 4 elements. The char * portion of the declaration indicates that each element of array suit is of type "*pointer to char*."
- The suits could have been placed into a double array in which each row would represent one suit, and each column would represent one of the letters of a suit name.

	ace	deuce	three	four	five	six	seven	eight	nine	ten	jack	queen	king
	0	1	2	3	4	5	6	7	8	9	10	11	12
Hearts 0													
Diamonds 1													
Clubs 2													
Spades 3													

suit[2][10] is a Jack of Clubs.

ARRAYS, STRINGS AND POINTERS

EXAMPLES OF POINTER AND STRINGS

```
int strlen (char *s)
{
    int x = 0;
    while (*s != '\0')
    {
        x++;
        s++;
    }
    return(x);
}
int strlen (char *s)
{
    int x = 0;
    while (*s++)
        x++;
    return (x);
}
```

```
strcpy (char *s1, char *s2)
{
    while (*s2 != '\0')
    {
        *s1 = *s2;
        s1++;
        s2++;
    }
}

strcpy (char *s1, char *s2)
{
    while (*s2)
        *s1++ = *s2++;
}
```

ARRAYS, STRINGS AND POINTERS

EXAMPLE USING POINTER

```
#include <stdio.h>

void main ()
{   static char *days[] = {"Sunday", "Monday", "Tuesday",
            "Wednesday", "Thursday", "Friday", "Saturday"};
    int i;
    for( i = 0; i < 6; ++i )
        printf ( "%s\n", days[i]);
    return;
}
```