

Passings functions to other functions: pointers to functions

Pointers to functions

- A function like a variable has an address location in the memory.
- Thus we can have pointer to a function.
 - which can be passed as an argument to another function.
 - we call the function which is passed as the guest function.
 - we call the function to which the function is passed as the host function.

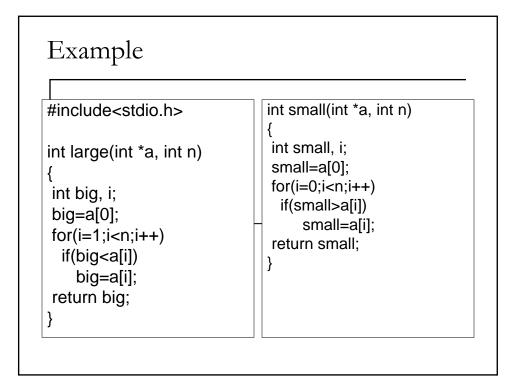
#include <stdio.h></stdio.h>		
#include <string.h></string.h>		
void funct1(int i, float f)		
{		
printf("%d %f\n",i,f);		
}		
int func2(char *s)		
{		
printf("%s\n",s);		
}		

Example

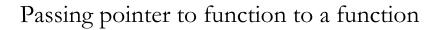
main()

{
 char s[50];
 void (*p)(int, float);
 int (*q)(char *), i=5;
 float f=1.23;
 puts("Enter a string:");
 gets(s);
 puts(s);
 p= funct1;
 q=func2;
 p(i,f);
 q(s);
}

Declarations When a host function accepts a pointer to a guest function, the declaration of the host function is as follows: host-funct-data-type host-function-name (guest-funct-data-type (* guest-function-name)(arg_type 1, arg_type 2,...);



```
Function with pointer to function as
argument
void select(int *b, int m1, int (*q)(int *, int))
{
    int ans;
    ans=q(b,m1);
    printf("%d\n",ans);
}
```

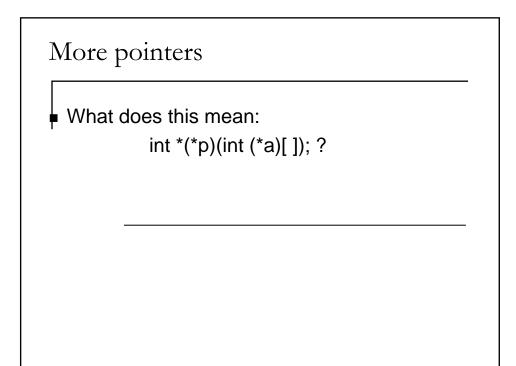


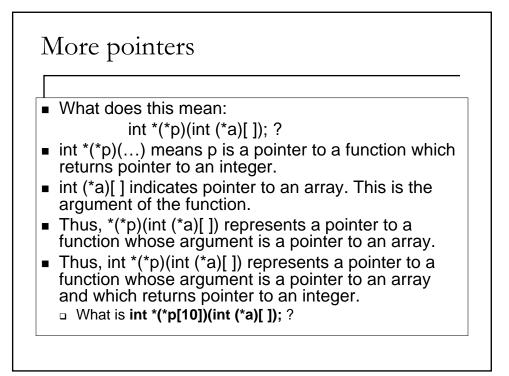
main()

}

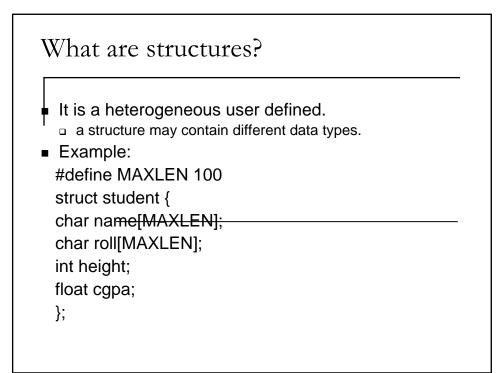
{ int n, i, a[20], (*ptr)(int *, int); printf("Enter the no of integers\n"); scanf("%d",&n); for(i=0;i<n;i++) scanf("%d",&a[i]);

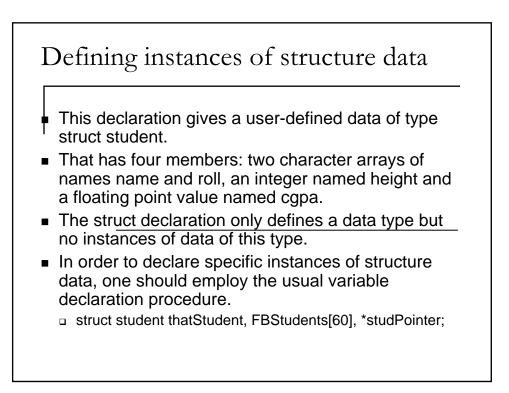
ptr=large; printf("Largest value is:\n"); select(a,n,ptr); printf("Smallest value is: \n"); select(a,n,small);

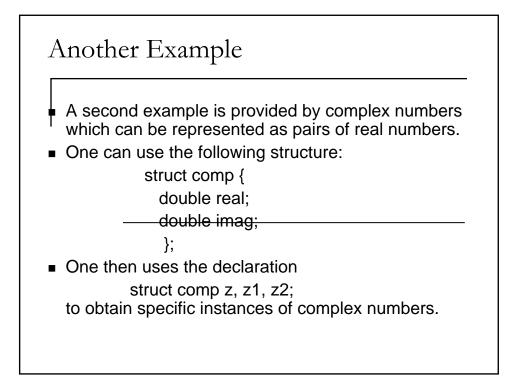


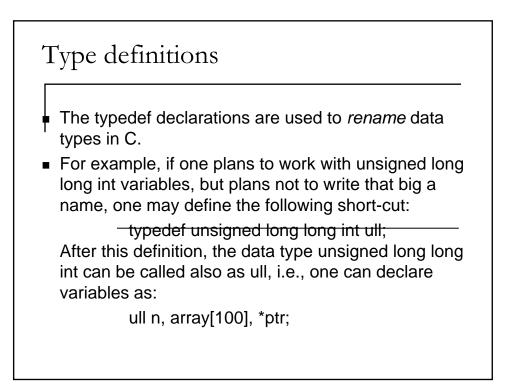


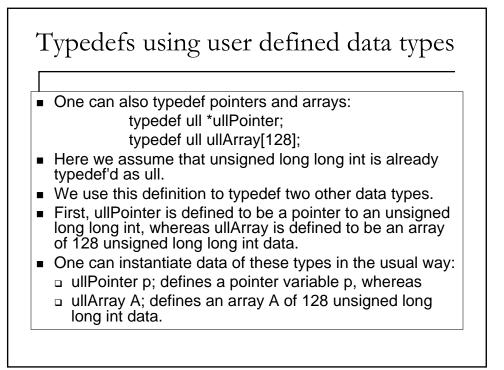
Structures

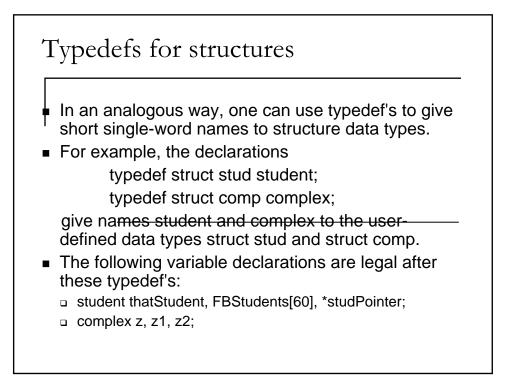


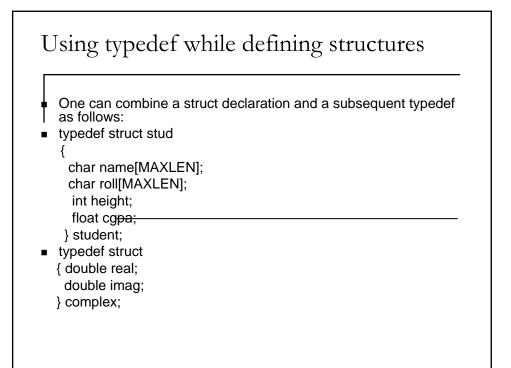


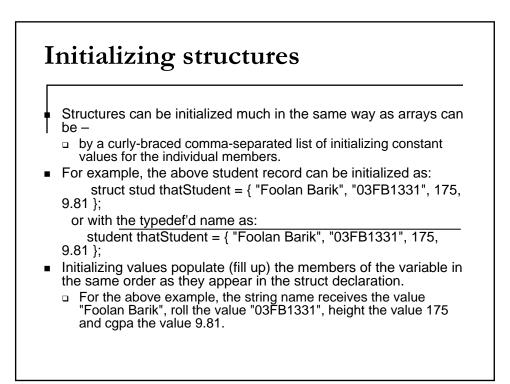


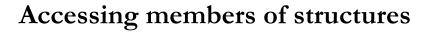




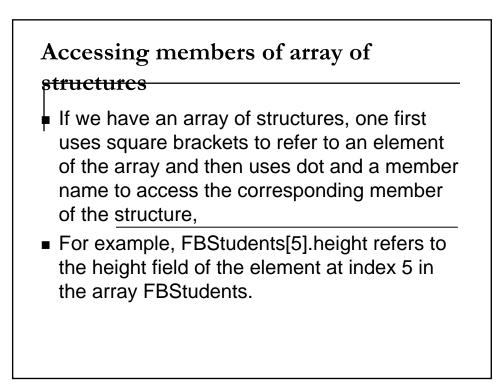


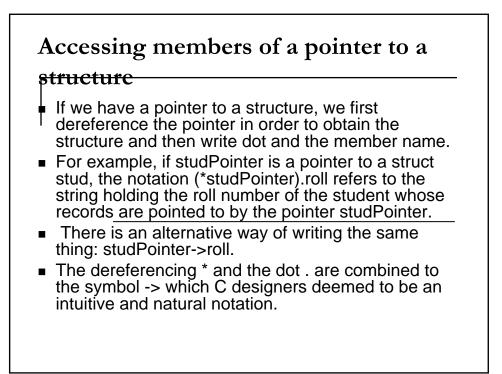


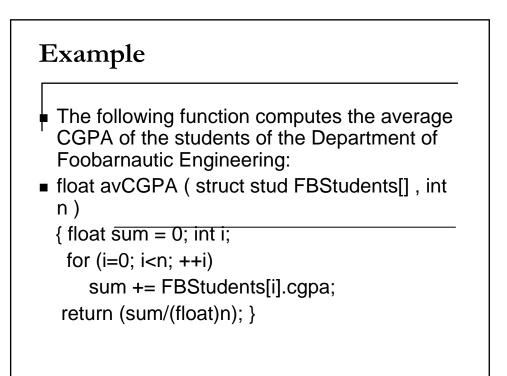




- Accessing individual members of a structure is different from what is done with arrays.
- Now one should write the name of a structure variable followed by a dot (.) and then by the formal name given to the member.
- For example, if thatStudent is initialized as above, thatStudent.name refers to the string "Foolan Barik", thatStudent.roll refers to the string "03FB1331", thatStudent.height refers to the integer value 175 and thatStudent.cgpa to the floating point value 9.81.







Example

```
Here is how you can do the same with pointers:
```

```
float avCGPA2 ( struct stud FBStudents[], int n)
```

```
{ float sum = 0;
    int i; struct stud *p; //define a pointer to the structure
```

```
p = FBStudents; //p points to the structure stud
```

```
FBStudents
```

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

```
{ sum += p->cgpa;
```

```
return (sum/(float)n); }
```