Two’s Complement Range

* Unsigned: 0 to 2b-1
* Signed: -2(b-1) to 2(b-1)-1

C Data Type Typical 32‐bit Intel IA 32 x86‐64

char 1 1 1

short 2 2 2

int 4 4 4

long 4 4 8

long long 8 8 8

float 4 4 4

double 8 8 8

long double 8 10/12 10/16

pointer 4 4 8

Shift Operators

* x<<k = x(2k)
* x>>k=x/(2k)

strncpy

* #include <string.h>
* Used to assign new string value to a c string(character array)
* E.g. strncpy (student1.name, “Harry Potter”, 25);

enum

* enum Color { Red, Green, Blue};
* enum Color color=red;

Pointers

* \*ptr -> value
* ptr -> address
* str[5]==’s’ = \*(str+5)==’s’

Struct

* Non-pointer: use.
* Pointer: use ->
* struct Student s1={{1,2},{3,4}};
* struct Student s1={“John”,1234567,’M’};-in-order
* Student{.name=”Amy”};
* S1.name = “Amy”;

C Heap Allocation

* p=(type\*) malloc(sizeof(type));
  + int\* int\_ptr = (int\*)malloc(sizeof(int));

1. Operating System is a software package that manages computer memory, concurrent programming, interaction b/w applications and hardware, and I/O communication in a computer system.
2. ls –a is used to list files, including those begin with a dot.
3. To allow directories to be created recursively must use –p
4. >> append
5. Arrange from fastest to slowest
   1. CPU registers
   2. L1 Cache
   3. L2 Cache
   4. RAM
   5. SSD
   6. HDD
6. CPU- extract, perform operations, load and store byte.
7. RAM DOES NOT provide permanent storage after machine is off.
8. On a Unix system, a compiler translates a source file to an executable.
9. A process is an abstraction of a running program.
10. The smallest negative number that can be represented by a signed 4 bit int in one’s complement representation is -7.
11. A byte is the smallest addressable unit of memory.
12. For an n bit signed integer, the two’s complement representation of a negative integer is the same as subtracting absolute value of x from 2^n
13. To insure sign extension when shifting right, use the signed int data type in c.
14. The XOR of an n-bit number and its one’s complement is (2^n)-1
15. The %3d format specifier should be used to print the value of the int variable x that contains value 3 such that it has a field with of 3 and is right aligned.
16. –E-S-C-O preprocessor, compiler, assembler, linker
17. # define directive- pre-processor
18. a.out- output from assembler if compile a program without the –o option.
19. The scope of a function is from the point of declaration to the end of the file being compiled.
20. Not freeing memory that is dynamically allocated using malloc causes memory leaks.
21. Int a[10]; the value of a == &a[0].
22. The size of a character pointer == size of an integer pointer.
23. Deep copy – copy everything Shallow copy- create new object and copy non-static fields.
24. malloc returns a NULL pointer if no memory is allocated.
25. Linking can be performed after compile time.
26. typedef char \*string;
27. Global variable automatically initialized to 0, variable declared in functions initialized to garbage.





