PG – DESD

Module – Embedded C Programming

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Pointer - Scale factor

- Size of data type of pointer is known as Scale factor.
- Scale factor defines number of bytes to be read/written while dereferencing the pointer.
- Scale factor of different pointers
  - Pointer to primitive types: char*, short*, int*, long*, float*, double*
  - Pointer to pointer: char**, short**, int**, long**, float**, double**, void**
  - Pointer to struct/union.
  - Pointer to enum.

Pointer arithmetic

- Scale factor plays significant role in pointer arithmetic.
- n locations ahead from current location
  - ptr + n = ptr + n * scale factor of ptr
- n locations behind from current location
  - ptr - n = ptr - n * scale factor of ptr
- number of locations in between
  - ptr1 – ptr2 = (ptr1 – ptr2) / scale factor of ptr1

Pointer arithmetic

- When pointer is incremented or decremented by 1, it changes by the scale factor.
- When integer ‘n’ is added or subtracted from a pointer, it changes by n * scale factor.
- Multiplication or division of any integer with pointer is not allowed.
- Addition, multiplication and division of two pointers is not allowed.
- Subtraction of two pointers gives number of locations in between. It is useful in arrays.

Thank you!

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