

# CSE 2421

## The C Language – Enumerated Data Types

# Enumerated Data Types

- ▶ An enumerated type is one whose values are symbolic constants rather than literals.
- ▶ Declaration example:
  - `enum Container_Type {CUP, PINT, QUART, HALF_GALLON, GALLON};`
- ▶ Declaration of a variable of the above type:
  - `enum Container_Type milk_bottle;`

# Enumerated Data Type (cont)

- ▶ Variables declared with an enumerated type are actually stored as **integers**.
- ▶ Internally, the symbolic names are treated as integer constants, and it is legal to assign them values, e.g.:
  - `enum Container_Type {CUP=8, PINT=16, QUART=32, HALF_GALLON=64, GALLON=128};`
  - Otherwise, by default, CUP =0, PINT=1, QUART=2, etc.
- ▶ Caution: don't mix them indiscriminately with integers – even though it is syntactically valid to do so.
  - `milk_bottle = -623; /*A bad idea, and likely to lead to trouble*/`
  - `int a = PINT; /*Also a bad idea, and likely to lead to trouble*/`

# Enumerated Data Types

- ▶ If there is only one declaration of variables of a particular enumerated type (i.e. no type name), both statements may be combined:
  - `enum {CUP, PINT, QUART, HALF_GALLON, GALLON} milk_bottle, gas_can, medicine_bottle;`
- ▶ `milk_bottle`, `gas_can`, and `medicine_bottle` are now all instances of the enum type, and all these variables can be assigned CUP, PINT, etc.
- ▶ No more variables of this type can be declared later because no type name was given to it
- ▶ Nor can pointers to this variable type be declared

# Enumerated Types Example

```
#include <stdio.h>

main() {
    enum month {jan = 1, feb=2, mar=3, apr=4, may=5,
jun = 6, jul=7, aug=8, sep=9, oct=10,
} this_month;
    this_month = feb;
    printf("month : %d\n",this_month);
}
```

nov = 11,dec=12

Output??



# Enumerated Types Example

```
#include <stdio.h>

main() {
    enum month {jan = 1, feb=2, mar=3, apr=4, may=5,
jun = 6, jul=7, aug=8, sep=9, oct=10,
} this_month;
    this_month = feb;
    printf("month : %d\n",this_month);
}
```

nov = 11,dec=12

**Output:**

month: 2

