

Lab-05

BE5B99CPL – C Programming Language

Reminder

- HW2 deadline this week
- HW3 draft evaluation this weekend
- HW4

Makefiles

- Save having to describe how to compile code each time
- Simple to use
- Simply type “make” in your terminal to run them

Makefile Example 1

all:

```
gcc main.c -o my_program
```

Makefile Example 2

CC = gcc

OBJS = main.c

LIBRARIES = -lm

FLAGS = -Wall

OBJ_NAME = my_program

all :

\$(CC) \$(OBJS) \$(LIBRARIES) \$(FLAGS) -o \$(OBJ_NAME)

Structs

- Find errors (if any):

```
typedef struct students
{
    char name[20];
    float height;
    char phone [15];
    char sex;
};
students st;
```

```
struct country
{
    char name[40];
    char capital [40];
    double population;
    double area;
};

country cn;
```

Structs

- Find errors (if any):

```
typedef struct
{
    char name[20];
    float height;
    char phone [15];
    char sex;
} students ;
students.height = 190;
```

```
struct country
{
    char name[40];
    char capital [40];
    double population;
    double area;
};

struct country cn;
```

Structs

- Find errors (if any):

```
struct Node{  
    char name[30];  
    int birth;  
    struct Node *next;  
};
```

```
Node* c;  
...  
scanf("%s %i", c.name, &c.birth);
```

```
struct point  
{  
    float x;  
    float y;  
};
```

```
scanf("%f %f", &x, &point.y);
```

Type definition

- Explain the following definitions. Give examples of valid assignments.

```
typedef int matr [15][7] ;
```

```
typedef struct {  
    float x;  
    float y;  
} point;
```

Type definition

- Describe the difference.

`int A;`

`typedef int A;`

`typedef int A[6];`

Task 1

Build a contact system/address book.

- Program allows users to enter information about contacts (name, age, date of birth). You should store this information in a struct.
- The user can add more contacts (hint: dynamic memory!)
- The user can view all saved contacts (loop through the contacts and print them)

Task 2

Extend the program from task 1

- The user can delete a contact (type the index of the user to delete)
- Use valgrind to verify that your program is running without any memory leaks
- Can you leverage enums when storing the date value? (e.g. to improve readability)