Computer Architecture

Discussion 2

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GCC

- Preprocessing   -E

- Compilation   -S

- Assembly   -c

- Linking

GDB-GNU Project Debugger

- Add debugger config to compilation   -g

- Start debuging   gdb   <program>

- Gdb commands
  - L b r p n step display finish bt

Struct

- Declaration and definition

    struct Info

    {

        Char gender = 'M';   /* no initialization */

        Int age = 25;

        double height = 1.7

    };

    Struct Info bingbing; /* allocate memory */

    sizeof(struct Info)   ?

Alignment

- **First address**
  - Divided by the size of the element with the largest size

- **Offset with respect to first address**
  - Divided by the size of the element

- **Total size of the struct**
  - Divided by the size of the element with the largest size

```
struct  Info
 {
    Int age;
    double height ;
    Char gender;    /* no initialization */
  };
```

Union

```
union  Info
{
    Char gender = 'M';    /* no initialization */
    Int age = 25;
    double height = 1.7
};
```

Share memory

Find Problems

1. /* Increments all the letters in the string str, held in an array of length n.*/

```
Void increment (char * str, int n){
    int I = 0;
    for (i = 0; i < n; i++)
        *(str + i)++;
}
```

2. /* Copy the src to dst. */
```
Void copy(char *src, char *dst){
    While (*dst++ = *src++)
```

THANKS