Program memory: pointers

COSC 208, Introduction to Computer Systems, 2021-09-22

Announcements

- Project 1 Part B due next Thursday (September 30)

Pointers

Q1: *Write a snippet of code that:*

1. *Declares a `char` variable called `orig` and initializes it with the value `'A'`*
2. *Declares and initializes a pointer called `ptr` that points to `orig`*
3. *Uses the pointer to update the value stored in `orig` to `'B'`*

```

```

Q2: *What is the output of this program?* — draw a memory diagram to help

```c
int main() {
    int a = 1;
    int b = 2;
    char c = 'C';
    int *x = &a;
    int *y = &b;
    char *z = &c;
    printf("%d %d %c\n", *x, *y, *z);
    *x += 1;
    b += 2;
    *z = 'D';
    printf("%d %d %c\n", *x, *y, *z);
    printf("%d %d %c\n", a, b, c);
    x = y;
    *x += 10;
    a += 20;
    printf("%d %d\n", *x, *y);
    printf("%d %d\n", a, b);
}
```

Pointers as parameters

Example

```

```

```c
void value(int a) {
    a = 2;
}
void pointer(int *b) {
    *b = 3;
}
int main() {
    int v = 1;
    int *p = &v;
    value(v);
    printf("%d\n", v);
    pointer(p);
    printf("%d\n", v);
}
```

Q4: *What is the output of this program?*

```c
void copy1(int a, int b) {
    a = b;
}
void copy2(int *c, int *d) {
    c = d;
}
void copy3(int *e, int *f) {
    *e = *f;
}
int main() {
    int q = 1;
    int r = 2;
    copy1(q, r);
    int s = 3;
    int t = 4;
    copy2(&s, &t);
    int u = 5;
    int v = 6;
    copy3(&u, &v);
    printf("%d %d %d %d %d %d\n", q, r, s, t, u, v);
}
```

Worksheet created by Professor Aaron Gember-Jacobson