

CS 12 - Quiz 3 February 12, 1997

1. (a) (3 pts) Name the passing technique used for passing arrays.

Answer: pass-by-reference

- (b) (3 pts) Name the passing technique used for passing structures.

Answer: pass-by-reference

2. (15 pts) Write a program that given a string, creates a string that is the double of the given string and returns a pointer to the double. A double of a string for example is, given the string

str = "ho" the double would be

strdouble = "hoho"

The given string should not be changed in any way. While you may receive partial credit, full credit will only be given for correct answers that make use of the string functions.

Answer:

```
char *strdouble(char *str) {
    char *tmp;
    strcpy(tmp, str);
    strcat(tmp, str);
    return tmp;
}
```

3. (6 pts) Define Abstract Data Type.

Answer: A type of data structure and the functions to manipulate that structure.

4. (a) (5 pts) Create a structure to keep track of information on a music CD. It should be able to hold the title of the CD, the name of the band, the number of songs, and the length (in minutes) of the CD.

Answer:

```
struct CD {
    char *title;
    char *name;
    int num_songs;
    int cd_len;
};
```

- (b) (5 pts) Declare an instance of the structure and show an example of how you would set the members of the structure.

Answer:

```
CD music;
music.title = new char[12];
strcpy(music.title, 'Abbey Road');
music.name = new char[8];
strcpy(music.name, 'Beatles');
music.num_songs = 15;
music.cd_len = 45;
```

- (c) (5 pts) Show how you would dynamically declare an instance of the structure and then set the members.

Answer:

```
CD *music = new CD;
music->title = new char[12];
strcpy(music->title, 'Abbey Road');
music->name = new char[8];
strcpy(music->name, 'Beatles');
music->num_songs = 15;
music->cd_len = 45;
```

5. (8 pts) Show the contents of A after the following code has been run.

```
int A[4] = {42, 1, 9, 64};
int *ip;
```

```
ip = A+1;
(*ip)++;
ip++;
*(ip + 1) += 3;
```

Answer: 42, 2, 9, 67