

```

1  /*****
2  * STRING_BASICS.C: LEARN HOW TO DECLARE AND WORK WITH STRINGS *
3  *****/
4
5  #include <stdio.h>
6  #include <string.h>
7
8  int main(){
9
10     // Define a string as a zero terminated character array
11     // The string literal is written into the array, including the
12     // zero terminating byte '\0'.
13     char s[] = "Yay!";
14     // We can also give the array explicitly.
15     char t[] = {'Y', 'a', 'y', '!', '\0'};
16     // Here we forgot to add '\0'. The result will be undefined behavior
17     // when trying to print the string.
18     char u[] = {'Y', 'a', 'y', '!'};
19
20     // We print both and see that they give the same result.
21     printf("s = \"%s\"\n", s);
22     printf("t = \"%s\"\n", t);
23
24     // An example of undefined behavior, as u is not zero
25     terminated.
26     //printf("u = \"%s\"\n", u);
27
28     s[0] = 'K';
29     printf("s = \"%s\"\n", s);
30
31     // When a string literal is not used as initialization for a character
32     array
33     // it is written to read only memory and a pointer to it is returned.
34     char *v = "Yay!"; // This tells the programmer that the content of v
35     is a constant.
36
37     // We can print v as usual, as the character array decays as well to a
38     // pointer to it's first element
39     printf("v = \"%s\"\n", v);
40     // but trying to write to the string literal will lead to a
41     segmentation fault
42     //v[0] = 'K';
43     //printf("v = \"%s\"\n", v);
44
45     // copy a string
46     size_t len = strlen(s)+1;
47     char w[len];
48     strcpy(w, s);
49     printf("w = \"%s\"\n", w);
50
51     // concatenate a string
52     char s1[BUFSIZ];
53     strcpy(s1, w);
54     strcat(s1, " ");
55     strcat(s1, v);
56     strcat(s1, " Enter something smart here!");
57
58     printf("s1 = \"%s\"\n", s1);
59
60     // check for equality
61     int result = strcmp(t, v);
62     if(result == 0){
63         printf("The strings t and v are equal.\n");
64     } else {
65         printf("The strings t and v are not the same!\n");
66     }
67
68     return 0;

```

