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Checked by groups 6 and 7

c-strings Worksheet

1. Given the declaration:

```
char string15[16];
```

Mark the following statements as valid or invalid. If a statement is invalid, explain why.

```
a. strcpy(string15, "Hello there");
```

valid

```
b. strlen(string15);
```

invalid – string15 is not initialized and so strlen will non-sensical output

```
c. string15 = "Jacksonville";
```

invalid – c-strings are not assignable in this manner

```
d. cin >> string15;
```

valid

```
e. cout << string15;
```

invalid – string15 is not initialized and so outputting to stdout will give non-sensical output

```
f. if (string15 >= "Nice day")
     cout << string15;
```

invalid – cannot compare a string literal to another string literal without using a comparison function

```
g. string15[6] = 't';
```

valid

2. Given the declaration:

```
char str1[15];
char str2[15] = "Good day";
```

Mark the following statements as valid or invalid. If a statement is invalid, explain why.

```
a. str1 = str2;
```

invalid – cannot assign a char array to a char array

b.
```
if (str1 == str2)
     cout << " Both strings are of the same length.\n";
```

invalid – comparing c-strings does not compare their length

c.
```
if (strlen(str1) >= strlen(str2))
     str1 = str2;
```

invalid – cannot assign a char array to a char array

d.
```
if (strcmp(str1, str2) < 0)
     cout << "str1 is less that str2." << endl;
```

valid

3. Given the declaration:

```
char name[8] = "Shelly";
```

Mark the following statements as ‘‘Yes’’ if they output Shelly. Otherwise, mark the statement as ‘‘No’’ and explain why it does not output Shelly.

a.
```
cout << name;
```

yes

b.
```
for (int j = 0; j < 6; j++)
     cout << name[j];
```

yes

c.
```
int j = 0;
while (name[j] != '\0')
     cout << name[j++];
```

yes

d.
```
int j = 0;
while (j < 8)
     cout << name[j++];
```

yes

4. Given the declaration:

```
char str1[21];
char str2[21];
```

a. Write a C++ statement that stores "Sunny Day" in str1.

```
strcpy(str1, "Sunny Day");
```

b. Write a C++ statement that stores the length of str1 into the int variable length.

```
int length = strlen(str1);
```

c. Write a C++ statement that copies the value of name into str2.

```
strcpy(str2, name);
```

d. Write C++ code that outputs str1 if str1 is less than or equal to str2, and otherwise outputs str2.

```
if(strcmp(str1, str2) < 0)
     cout << str1;
else
     cout << str2;
```

5. Assume the following declarations:

```
char name[21];
char yourName[21];
char studentName[31];
```

Mark the following statements as valid or invalid. If a statement is invalid, explain why.

```
a. cin >> name;
```

valid

```
b. cout << studentName;
```

valid

```
c. yourName[0] = '\0';
```

valid

d. `yourName = studentName;`

invalid – cannot assign a char array to a char array

e.
```
if (yourName == name)
    studentName = name;
```

invalid – comparing c-strings with == does not compare their contents

f. `int x = strcmp(yourName, studentName);`

valid

g. `strcpy(studentName, name);`

invalid – studentName is larger in size than name and could write to invalid memory

h.
```
for (int j = 0; j < 21; j++)
    cout << name[j];
```

valid

6. Write a statement that will convert the string “10” to an integer and store the result in the variable `num`.

`int num = atoi(“10”);`

7. Write a statement that will convert the string “100000” to a long and store the result in the variable `num`.

`long num = atol(“100000”);`

8. Write a statement that will convert the string “7.2389” to a double and store the result in the variable `num`.

`double num = atof(“7.2389”);`

9. How many char values are stored in the character array "Hello, World!\n"?

15

What is `strlen("Hello, World!\n")`? **14**