Unit 16

Review
Topics

• Cumulative
  – Variables and Expressions
  – Conditional ('if') statements
  – While and For loops
    • Nested loops
  – Arrays
  – Functions
  – Strings
Questions 1

- Arrays are passed-by-_____________
  - What does that mean?
- int, double, char, and bool variables are passed-by-_____________
  - What does that mean?
- True/False: The name of an argument in a function signature must match the variable passed to the function
- Assuming x is an 'int', write an equivalent if statement to replace `if(x < 40 || x > 40)`

```c
void f1(int x) {
    ...
}

int main()
{
    int x = 5;
    f1(x);
}
```
Questions 2

• **True/False**: It is possible to have an 'else' statement without a corresponding 'if'.
• **True/False**: It is possible to have an 'else if' statement without a following 'else'.
• **True/False**: If \( x = 100 \) and \( y = -100 \) then the following 'if' statement will evaluate to true:
  
  ```
  if ( x != 100 || y > 0 || y != 100) {
  }
  ```

  • Character array strings (written in double quotes ("..")) end with what special character?
• **True/False**: There is no difference between 'a' and "a".
Questions 3

• **True/False**: You can append a character to a character array using the '+' operator
  – For example: char str[10] = "Hi"; str = str + "t"; would yield "Hit"
  – How could you make the char array have the word "hit"

• **True/False**: C++ **strings** track their size

• What will the code to the right print?

```cpp
int f1(int x) {
    x = x-1;
    return x;
}

int main() {
    int x = 5;
    f1(x);
    cout << x;
}
```
Trace the Program Output

```cpp
// Assume the user types in:
//
// 4
// 3 17 8 1
//
// What will be output?
int main() {
    // read the input
    int n;
    cin >> n;
    int data[100]; // declare an array, max size 100
    for (int i = 0; i < n; i++)
        cin >> data[i]; // read elements of data from input

    for(int i=0; i < n; i++){
        int temp = data[i];
        data[i] = data[n-i-1];
        data[n-i-1] = temp;
    }

    for (int i = 0; i < n; i++)
      cout << data[i] << " ";

    return 0;
}
```
#include <iostream>
using namespace std;

void f1(int d[], int n, int x);
int f2(int d[], int a, int b);
int f3(int a, int b, int c);

void f1(int d[], int n, int x)
{
    for(int i=0; i < n/x; i++)
    {  
        d[i] = x*x;
    }
}

int f2(int d[], int a, int b)
{
    int sum = 0;
    for(int i=a; i < b; i++)
    {
        if( d[i] % 2 == 0 )
        {
            sum += d[i];
        }
    }
    return sum;
}

int f3(int a, int b, int c)
{
    if( a % b == 0) {
        return c;
    }
    else if( a % c == 0) {
        return b;
    }
    return a;
}

int main()
{
    int dat[8] = { 1, 3, 4, 8, 2, 5, 2, 9 };
    f1(dat, 8, f3(dat[7], dat[1], 3));
    cout << f2(dat, 1, 6) << endl;
    for(int i=0; i < 8; i++)
    {
        cout << dat[i] << " ";
    }
    cout << endl;
    return 0;
}
Exercises

• cpp/cs102/final/prac-1
• cpp/cs102/duplicate