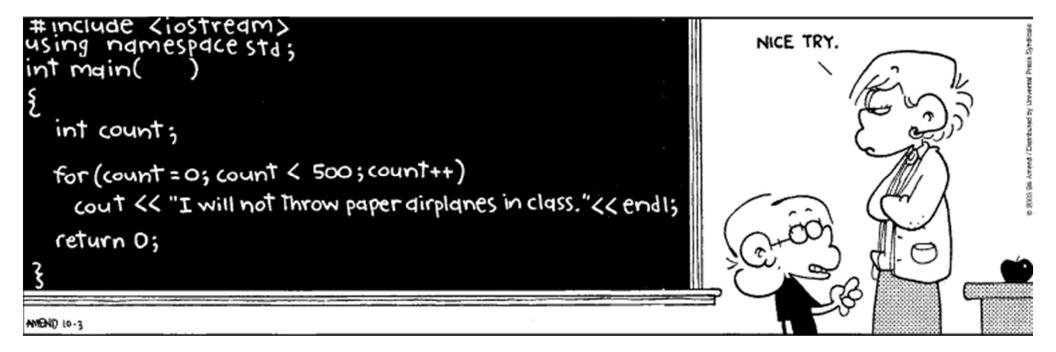
CS 161, Lecture 6: Loops – 24 January 2018



```
Recall Conditionals
```

```
if (user_input == "I'm Blue") {
    cout << "Da ba dee da ba daa" << endl;
}</pre>
```

- Only executes once
- What if the user makes a mistake? Did we only get one shot?

Loops

- Allow us to repeat over and over again until we have met some condition
 - May be relational condition
 - May be incremental or fixed number of time
- Examples of real life loops:

Daily routine class schedule Sweeping floor Wathing

While Loop

- Like an if statement but do it until the condition is met, don't just move on if it doesn't evaluate on the first go
- Use a while loop when you don't know how many times the code will have to execute
- Real life examples:

While Loop Example

```
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                                                                              _
  1 #include <iostream>
  2 #include <ctime>
  3 #include <cstdlib>
  4 using namespace std;
  5
  6 int main () {
  7
             srand(time(NULL));
  8
             int user num = 0;
  9
             int correct number = rand() % 10 + 1;
 10
             cout << "Give a number between 1 and 10: " << endl;
 11
             cin >> user num;
 12
             while (user num != correct number) {
 13
                     cout << "Give a number between 1 and 10: " << endl;
 14
                     cin >> user_num;
 15
             }
 16
 17
             cout << "You got the correct number!" << endl;</pre>
 18
 19
 20
             return 0;
 21 }
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```

Do While

- While loops only start if the condition is initially true
- Maybe we can't determine if it needs to run until we execute that code once
- Do while loops run the code once and then check to see if it should keep running

Do While Example

```
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                                                                                        X
  1 #include <iostream>
  2 #include <ctime>
  3 #include <cstdlib>
  4 using namespace std;
  5
  6 int main () {
  7
             srand(time(NULL));
  8
             int user_num = 0;
  9
             int correct number = rand() % 10 + 1;
             cout << "Give a number between 1 and 10: " << endl;
 10
             cin >> user_num;
 11
 12
             do {
 13
                       cout << "Give a number between 1 and 10: " << endl;
 14
                       cin >> user num;
 15
             } while (user num != correct number);
 16
 17
             cout << "You got the correct number!" << endl;</pre>
 18
 19
 20
             return 0;
 21 }
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```

For Loops

- No condition to check
- Executes for a set number of times
- Examples of for loops in the real world:

For Loop Example

```
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  6
             cout << "Yo listen up, here's the story" << endl;
  7
             cout << "About a little guy that lives in a blue world" << endl;
  8
             cout << "And all day and all night and everything he sees is just
     blue" << endl;</pre>
  9
             cout << "Like him, inside and outside" << endl;
 10
             cout << "Blue his house with a blue little window" << endl;
 11
             cout << "And a blue Corvette" << endl;</pre>
 12
             cout << "And everything is blue for him" << endl;
 13
             cout << "And himself and everybody around" << endl;
 14
             cout << "'Cause he ain't got nobody to listen" << endl;</pre>
 15
 16
             for(int i = 0; i < 2; i++) {</pre>
 17
                       cout << "I'm blue ";</pre>
 18
                       for(int j = 0; j < 6; j++) {</pre>
 19
                                if (j == 3) {
 20
                                         cout << endl;</pre>
 21
                                }
 22
                                cout << "Da ba dee da ba daa, ";
 23
                       }
 24
                       cout << endl;</pre>
 25
             }
 26
 27
             return 0;
 28 }
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                                                                  8 ^ 10 6 6 1) 1
```

```
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                                                                                  - 0 ×
  6 int main () {
  7
             srand(time(NULL));
  8
             int user num = 0;
  9
             int correct number = rand() % 10 + 1;
             //cout << "Give a number between 1 and 10: " << endl;</pre>
 10
             //cin >> user num;
 11
 12
              /*do{
 13
                       cout << "Give a number between 1 and 10: " << endl;
 14
                       cin >> user num;
              } while (user num != correct number);*/
 15
 16
 17
             for(int i = 0; i < 10; i++) {</pre>
 18
                       cout << "Give a number between 1 and 10: " << endl;
 19
                       cin >> user num;
                       if (user num == correct number) {
 20
 21
                                break;
 22
                       }
 23
              }
 24
 25
             cout << "You got the correct number!" << endl;</pre>
 26
 27
 28
             return 0;
 29 }
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