

# CS 161, Lecture 6: Loops – 24 January 2018

```
#include <iostream>
using namespace std;
int main(    )
{
    int count;

    for(count = 0; count < 500; count++)
        cout << "I will not throw paper airplanes in class." << endl;
    return 0;
}
```

AMEAD 10-3



# Recall Conditionals

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

- 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  
Walking

# 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 raining → then keep rain coat on  
while hungry → eat  
while taking test → stay silent

# While Loop Example

```
access.engr.orst.edu - PuTTY
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;
18
19
20    return 0;
21 }
~
~
~
"loop_examples.cpp" 21L, 421C written      17,2-9      All
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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

```
access.engr.orst.edu - PuTTY
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    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;
18
19
20    return 0;
21 }
~
~
~
15,38-45 All
```

# For Loops

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

for two times in a day → brush teeth  
for 14 days → apply a white strip  
for 5 days → go to class  
for 10 reps → do push ups



# For Loop Example

```
access.engr.orst.edu - PuTTY
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;
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;
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;
15
16     for(int i = 0; i < 2; i++) {
17         cout << "I'm blue ";
18         for(int j = 0; j < 6; j++) {
19             if (j == 3) {
20                 cout << endl;
21             }
22             cout << "Da ba dee da ba daa, ";
23         }
24         cout << endl;
25     }
26
27     return 0;
28 }
```

```
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    /*do{
13        cout << "Give a number between 1 and 10: " << endl;
14        cin >> user_num;
15    } while (user_num != correct_number);*/
16
17    for(int i = 0; i < 10; i++) {
18        cout << "Give a number between 1 and 10: " << endl;
19        cin >> user_num;
20        if (user_num == correct_number) {
21            break;
22        }
23    }
24
25    cout << "You got the correct number!" << endl;
26
27
28    return 0;
29 }
```

29,1

Bot