

# INTRO TO LAB02, MAKEFILES, REVIEW LOOPS/FUNCTIONS

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Problem Solving with Computers-I

<https://ucsb-cs16-sp17.github.io/>

C++

```
#include <iostream>
using namespace std;

int main(){
    cout<<"Hola Facebook\n";
    return 0;
}
```



Clickers out – frequency AB

# Demo

- Basics of code compilation in C++ (review)
- Makefiles (used to automate compilation of medium to large projects) consisting of many files
- We will start by using a makefile to compile just a single program
- Extend to the case where your program is split between multiple files
- By the end of this you should know what each of the following are and how they are used in program compilation
  - Header file (.h)
  - Source file (.cpp)
  - Object file (.o)
  - Executable
  - Makefile

# Control Flow: while and do while loops

```
while(Boolean expression) {  
    //statement 1  
    //statement 2  
}
```

```
do{  
    //statement 1  
    //statement 2  
}while(Boolean expression);
```

Identify the code that is not equivalent to the other two?  
Assume 'n' is an integer that has already been declared (may be positive or negative)

**A.**

```
for( int x = 0; x < n; x++ ) {  
    cout<<x <<endl;  
}
```

**B.**

```
int x = 0;  
while(x < n) {  
    cout<< x << endl;  
    x++;  
}
```

**C.**

```
int x = 0;  
do{  
    cout<< x<< endl;  
    x++;  
} while(x < n);
```

**D.** They are ALL equivalent

# Infinite loops

```
for(int y=0;y<10;y--)  
    cout<<"Print forever\n";
```

```
int y=0;  
for(;;y++)  
    cout<<"Print forever\n";
```

```
int y=0;  
for(;y<10;);  
    y++;
```

```
int y=0;  
while(y<10)  
    cout<<"Print forever\n";
```

```
int y=0;  
while(y=2)  
    y++;
```

# Function call mechanics

What is the output of the following code

```
int sum(int a, int b){  
    cout<< a+b;  
}  
int main(){  
    int result =0;  
    int x =10, y =20;  
    result = sum(x, y);  
    cout<<result+30;  
}
```

# Function call mechanics

What is the output of the following code

```
int sum(int a, int b){  
    return a+b;  
}  
  
int main(){  
    int result =0;  
    int x =10, y =20;  
    result = sum(x, y);  
    cout<<result+30;  
}
```

# Function call mechanics

What is the output of the following code

```
int sum(int a, int b){
    int result= a+b;
    exit(0);
}

int main(){
    int result =0;
    int x =10, y =20;
    result = sum(x, y);
    cout<<result+30;
}
```



# for loop OR while loop? Which one should you use?

```
for (int i = 0; i < 15; i++) {  
    cout << i << endl ;  
}
```

```
int j =0;  
int n;  
while(j < 15) {  
    cout << "Enter a number" << endl ;  
    cin>>n;  
    j = j+n;  
    cout<<"Current value of j is:"<<endl;  
}
```

# Next time

- File IO
- Intro to lab03