CIS*1500 Lab 8

Introduction to Programming
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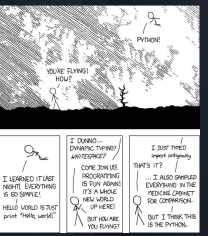
Today’s Lab

- Overview of Functions
- Warm up
- Programming Exercise
- Debugging practice with functions
- Lab exam review/discussion

Check out the Side Quests offered this week!

Side Quest Schedule (In the Thorn Pi Lab)

Workshop:	Date	Time
Git	Wednesday, Nov. 4th	4:30
Extra Practice	Thursday, Nov. 5th	5:30
A1 Review Session	Friday, Nov. 6th	5:30
Python	Monday, Nov. 9th	5:15
Git	Wednesday, Nov. 11th	12:30
Advanced C	Friday, Nov. 13th	5:30
Makefiles and Other Command line tools	Monday, Nov. 16th	5:00



What is a function?

- A group of statements that together perform a task

Return Type

Name of Function

Parameters

```
int squared(int num)
{
    return num*num;
}
```

Function arguments/parameters act as local variables within the function

Pass by Value

ans = squared(5);

//int squared(int num)

Copies the actual value of the argument(5) into the formal parameter(num) of the function.

The code in the function cannot alter the arguments used to call the function!

A note about scope

```
double areaCalc(double side1, double side2)
{
    double rectArea;
    rectArea = 0.00;

    rectArea = side1*side2;

    return(rectArea);
}
```

Why use functions?

- Readability
- Reusability → You can create your own library of useful functions
- Divide and Conquer
- Allows us to test small parts of our program
- Modularity!
- sheer laziness… 500 loc vs 150
- There’s literally no escape from using them...

Warm-up Exercise

Create a program with the following functions:

areaOfTriangle: will return the area of a triangle given the base and height

printArea: will print out the area with units, given the area of the shape

Submit it to git!

```
git add file.c
git commit -a -m “my message here”
git push
```

Warm-up Exercise

Create a program with the following function:

expoCalc: Calculates exponents given the base and power and returns the result.

<assume positive integers for the base and power>

Submit it to git!

```
git add file.c
git commit -a -m “my message here”
git push
```

Lab Exercise #1: 99 bottles of beer on the wall

- Write a program that prints the lyrics to the song 99 bottles of beer on the wall.
- The program must ask the user how many verses to print and that will be the starting number (i.e. user enters 10 and the song starts at 10 bottles).
- The user must have a choice of beverage type (pop, beer, water) and a choice of container (bottles, cartons, cans).
- The program must randomly determine which third line to print: Take one down and pass it around or If one of those bottles should happen to fall.

Functions we'll be creating

char chooseContainer(void)

int chooseItem(void)

void printContainer(char choice)

void printItem(int bev)

void printThirdLine(char container)

```
How many verses? 5
Do you choose pop(1), beer(2) or milk(3)? 2
Do you choose bottles (b), cartons (c) or cans (s)? b
5 bottles of beer on the wall
5 bottles of beer
If one of those bottles should happen to fall
4 bottles of beer on the wall

4 bottles of beer on the wall
4 bottles of beer
Take one down and pass it around
3 bottles of beer on the wall

3 bottles of beer on the wall
3 bottles of beer
If one of those bottles should happen to fall
2 bottles of beer on the wall

2 bottles of beer on the wall
2 bottles of beer
If one of those bottles should happen to fall
1 bottles of beer on the wall

1 bottles of beer on the wall
1 bottles of beer
If one of those bottles should happen to fall
0 bottles of beer on the wall
```

Common Lab Exam Mistakes

- scanf(%d, var);
- #include <stdio.h> // forgetting this
- How to use a loop… or an if statement..

```
while(var < 10);
{
    var--;
}
```

```
for(i--);
{
    something();
}
```

```
if(cond);
{
    something();
}
```

More Exercises

Under Third Quarter:

Go onto bucky and go through

Lesson: Functions

In Independent Exercises,

Lab 8: Functions

The only way to get better is to practice!!!

Got a question?

- Ask me! :)
- Post on the Forums: forum.socs.uoguelph.ca
- Email us: cis1500@socs.uoguelph.ca

Protip: Search the forums and bucky before making a post or sending an email!

Need Extra help?

- Free tutoring offered by TAs! (Book an appointment on bucky) (also see me after Lab)
- Drop-in help hours (right after your Lecture!) (11:30,2:30 and 5:30) (Tuesday & Thursday)

All meetings will take place in room 001/002 in the basement of Reynolds.

Or are you Incredibly Bored?

And looking for a Challenge? Or something new?

Come see me after lab!

Join GCC!

See bucky for SideQuests!(Also email cis*1500)

Sites To Check To Stay up to Date

Course Website: bucky.socs.uoguelph.ca

SOCS Forums: forum.socs.uoguelph.ca

Textbook: zybooks.com

Reminders!

- **Complete assigned textbook readings** before 9 am Tomorrow(Tuesday)!
- **Protip: Finish assigned readings before your Lab!** (The lab will feel like a light breeze if you do that)
- Get started on your assignment!