

Computer Science & Engineering 150A

Problem Solving Using Computers – Laboratory

Lecture 10 - Review and Debug

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Announcement: CodeLab assignment

CSCE150A

Assignment

Data Type

Operators

Math

Function

Condition

Loops

Debugging

- The 5th CodeLab assignment

"CodeLab Assignment-5"

Due: 23:59 Apr 5

Var Name	Stores	Scanf	Printf
int	Integers	%d	%d
double	Decimals	%lf	%f
char	Letters	%c	%c

- `char grade = 'A';`
- `%10d %7.2f`
- Type cast
 - `int i=3, j=4;`
 - `double k;`
 - `k=(double)i/j;`

Some Operators

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- Math operators: $+$ $-$ $*$ $/$ $\%(\text{remainder})$
- Relation and equality operators: $<$ $>$ $<=$ $>=$
 $==$ $!=$
- logical operators: $\&\&$ $||$ $!$
- Notes: order of operators; using " $()$ ".

- Math function: `abs(x)`, `fabs(x)`, `sin(x)`, `cos(x)`, `pow(x,y)`, `sqrt(x)`
- `#include <math.h>`
- Math expression:

$$\left| \frac{1}{\sqrt{1-x^2}} \right| \Rightarrow \text{fabs}(1.0/\text{sqrt}(1-\text{pow}(x,2)))$$

```
#include <stdio.h>
```

```
double CountArea(double x, double y); \\Prototype
```

```
int main(void)
```

```
{
```

```
...
```

```
area = CountArea(x, y); \\Call the function
```

```
...
```

```
}
```

```
double CountArea(double x, double y) \\Definition
```

```
{
```

```
return (x * y);
```

```
}
```

if... else... statements

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```
if (x > 3 && y <= 4)
{
    ...
}
else
{
    ...
}
```

if... else if...else...

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```
if ( grade <= 80 )  
{  
    ...  
}  
else if ( grade <= 90 )  
{  
    ...  
}  
else  
{  
    ...  
}
```


Nested if

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```
if ( AverageTemperature > 70 )
{
    if ( NumRainDays > 150 )
        printf("Tropical rainforest climate");
    else if ( NumRainDays > 50 )
        printf("Semi-tropical climate");
    else
        printf("May be tropical desert climate");
}
```

```
int windlevel ;
...
switch ( windlevel )
{
    case 2:
        printf("Level 2:  Breeze") ;
        break ;
    case 7:
        printf("Level 7:  Strong wind") ;
        break ;
    case 10:
        printf("Level 10:  Storm wind") ;
        break ;

    default:
        printf("More detail see our website") ;
}
```

While loop

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```
int i=1, total=0;
```

```
while ( i <=10 )  
{  
    total = total + i;  
    i++;  
}
```

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```
int i=1, total=0;

do
{
    total = total + i;
    i++;
} while ( i <= 10 );
```

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```
for ( i = 1; i < 10; i++ )  
{  
    total = total + i;  
}
```

Code::Blocks instruction

- Create a new project
 - New project
 - Console Application → Go
 - Select "c" not "c++"
 - Project title and saving folder.
 - GNU GCC Compiler
- Copy your desired source code into main.c

Code::Blocks instruction

- Save: Ctrl + S
- Build: Ctrl + F9
- Build and run: F9
- Run to Cursor F4
- Toggle breakpoint: F5
- Next line: F7
- Step into: Ctrl + F7
- Step out: Shift + Ctrl + F7
- Open "Watches Window" to view value of variables.