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Loops 2

CS 124 – Intro to Software Development

Macbeth – Lesson 6.2

Agenda

- Opening Prayer
- Spiritual Thought
- Q&A
- Review Assignment 24
- Learning Together – More Loops
- Project 06
- Looking Ahead

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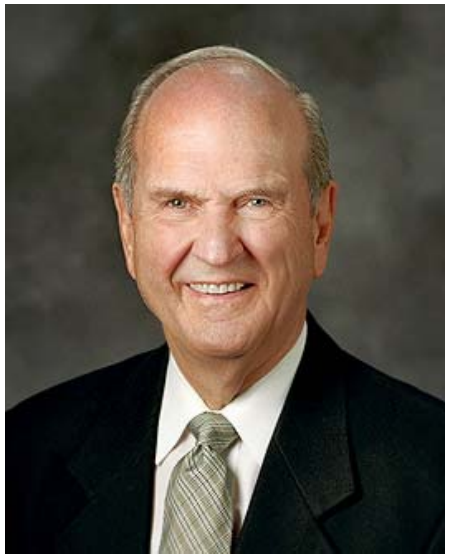
Spiritual Thought

President Russell M. Nelson

"My brothers and sisters, how precious is the Book of Mormon to you? If you were offered diamonds or rubies or the Book of Mormon, which would you choose? Honestly, which is of greater worth to you?"



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Review Assignment 24

Loops

FOR	WHILE-DO	DO-WHILE

`int sum = 0;`
`for (int i=1; i<11; i++)`
`{`
`  sum += i;`
`}`
`cout << sum;`
	`int sum = 0;`
	`int i = 1;`
	`while (i < 11)`
	`{`
	`  sum += i;`
	`  i++;`
	`}`
	`cout << sum;`
		`int sum = 0;`
		`int i = 1;`
		`do`
		`{`
		`  sum += i;`
		`  i++;`
		`}`
		`while (i < 11);`
		`cout << sum;`

Ponder and convince yourself that each of these will print the number 55 (the sum of the first 10 integers).

Loops

FOR	WHILE-DO	DO-WHILE

`int sum = 0;`
`for (int i=1; i<1; i++)`
`{`
`  sum += i;`
`}`
`cout << sum;`
	`int sum = 0;`
	`int i = 1;`
	`while (i < 1)`
	`{`
	`  sum += i;`
	`  i++;`
	`}`
	`cout << sum;`
		`int sum = 0;`
		`int i = 1;`
		`do`
		`{`
		`  sum += i;`
		`  i++;`
		`}`
		`while (i < 1);`
		`cout << sum;`

The condition has been changed from (i<11) to (i<1).

Do all 3 code blocks still print out the same number???

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Which Loop is Best?

What you know about your loop	Which loop should you choose?
You know exactly how many times to loop.	for loop
You don't know how many times to loop but you know you want to loop at least once.	do while loop
You don't know how many times to loop and its okay if you don't loop even once.	while loop

Choose from:

- for loop
- do while loop
- while loop

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What Loop Would You Use?

1. Implement the linux command line. Respond to commands until the user types exit.
2. Search through a database of 1000 medical records and send emails to all patients that have not received a flu shot this year.
3. Continuously run aircraft tests when the airplane is on the ground and the maintenance switch is turned on.
4. Calculate n! (factorial)
5. If the transmission of data to the server fails, then keep trying again until it works.

A – For Loop

B – While Loop

C – Do While Loop

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Solutions

(1)– Linux Command

```
char command[256];
do
{
   cout << "$";
   cin >> command;
   runCommand(command);
}
while (command != "exit");
```

(2) – Search Database

```
for (int i=1; i<=1000; i++)
{
   checkFluShot(i);
}
```

(3) – Aircraft Tests

```
while (onGround && maintSwitchOn)
{
   runAircraftTests();
}
```

(4) – Calculate Factorial (n!)

```
int factorial = 1;
for (int i=1; i<n; i++)
{
   factorial *= i;
}
```

(5) – Data to Server

```
bool result;
do
{
   result = transmitData(data);
}
while (!result);
```

Project 06

- Project 06 requires that you write pseudocode for `computeOffset` and `displayTable` functions.
- You are required to type your project (with your name on it), print it out, and turn it on Monday.
- You will be graded on how well you communicate your algorithm using pseudo code. Use the pseudo code as described in the textbook.

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Looking Forward

- Before Class on Friday
  - Read Section 2.5 – Loop Design
  - Assignment 2.5

- Start work on your Calendar Project
  - Create stubs for the 9 functions and the main function using the structure chart you received today
  - By Friday, write the code for the following:
    - numDaysInYear
    - numDaysInMonth
    - displayTable – This is assignment 2.5
    - main – write some driver code to test the functions above – remember to declare the variables in main for the values returned by these functions.
  - We will look at this amount of code on Friday in class …so be prepared!!