

CS100: Introduction to Computer Science

Lecture 17: Programming Language: Perl (IV) -
flow control

Review: Conditional Execution

```
n if (condition)
{
    statement A;
}

n if (condition)
{
    statement A;
}
else
{
    statement B;
}
```

Review: Comparison Operators:

Comparison	Numeric	String
Equal	==	eq
Not Equal	!=	ne
Less than	<	lt
Greater than	>	gt
Less or equal to	<=	le
Greater or equal to	>=	ge

Review: A while loop

```
$x = 0;
while ($x < 5)
{
    print ("The value of x is $x\n");
    $x++;
}
```

Review: a for loop

```
for ($x = 0; $x < 5; $x++)
{
    print ("The value of x is $x\n");
}
```

Exercise 1: Write a program to output the
maximum given three numbers.

Exercise 2: Display the following graph on the screen (learn to use the for loop or while loop, or use nested loops)

```
#####
#####
#####
#####
#####
#####
```

Exercise 3: Write a program that prompts the user for 10 numbers and then prints their average.

Code for Exercise 3.

```
#prompt the user for all 10 numbers and store them in the array numbers
for (i=0; i < 10; i++)
{
    print ("Enter a number (i) :\n");
    $numbers[i] = <STDIN>;
}

#sum up all values in the array numbers
$sum = 0;
for (i=0; i < 10; i++)
{
    $sum += $numbers[i];
}

#Divide the sum by 10 and get the average, then print it
$average = $sum / 10.0;
print ("The average of all the 10 numbers is $average\n");
```

Readability

- n Long and complex programs consisting thousands of lines.
- n Share your codes with others
 - q A group of peoples work on the same project
 - q Modify codes written by other programmers.

Good Habits for Producing Easily Readable Codes

- n Structured Programming
 - q Appropriate use of newlines
 - q Consistently indenting of code blocks, each nested block can be indented further than the previous block
- n Comments
 - q Notes in your code
 - q Initiating with the # character
- n Descriptive variable names

```
#####
# Factorial Program #
# John C. Programmer; July 2001 #
# This program prints the integers from 1 to 10 #
# and the factorial of each to the screen #
#####

# for each number from 1 to 10
for ($number = 1; $number <= 10; $number++)
{
    #print the number to the screen:
    print ("Number : $number!\n");

    #initialize the factorial to 1
    $factorial = 1;
    #compute the factorial by multiplying with 2, 3, .. $number
    for ($i = 2; $i <= $number; $i++)
    {
        $factorial *= $i;
    }

    #now the factorial is computed, print it to the screen and go on to
    #the next number.
    print ("Factorial: $factorial!\n");
}
```

Announcements:

n Lab 4 this week

n Next lecture: Monday April 16th

q Read from/write to files & function
