CS 111
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/* ask user for a positive number
 * terminate the program if input is illegal
 * reverse the number and print it out
 */
#include <cstdlib>
#include <iostream>
using namespace std;
int main(){
    int num, reverse = 0;
    cout << "Please enter a positive number: ";
    cin >> num;
    if (num < 0){ cout<<"Bad input. \n"; exit(0);} // Action - put all digits from num to reverse
    while (num > 0){
        reverse = reverse * 10 + num % 10;
        num /= 10;
    }
    cout << "Reversed: " << reverse << endl;
    return 0; }

Coding

/* Given int variable x
 * Print all positive factors of x
 * Ex: x is 36, factors: 1,2,3,4,6,9,12,18,36
 * Plan: factors range 1-36(x), test each number
 */

cout << "factors: ";
int factor_candi = 1;
while (factor_candi <= x){

// test if factor_candi is a factor of x
if (x % factor_candi == 0){
    cout << factor_candi << "," ;
}

factor_candi++;
}

program.cpp

/* ask user for a positive value \n* assume input is legal and print a line of x *’s */
#include <iostream>
using namespace std;
int main(){
    int x, counter;
    cout << "Please enter a positive number: ";
    cin >> x;
    counter = 1;
    while (counter <= x){
        cout << "*" ;
        counter++;
    }
    return 0;
}"
Repeatedly Making Decision

Sometimes, number of times to repeat the action is known, it’s same as a given value, then to accommodate this need better, we have a different kind of loop. - for loop

Model using while loop:
int counter = 1;
while (counter <= x){
    Statement to perform Actions
    counter++;
}
for (initialize; condition; update)
For Loop Logic Flow

Start statement

Initialize counter

Condition (Test Expression)

False
Update counter

True
Statement (Body of for)

Rest statement
/* print a horizontal line of 50 *’s */
int counter = 1;
while (counter <= 50)
{
    cout << "*";
    counter++;
}
count << endl;
for (int counter = 1; counter <= 50; counter++)
{
    cout << "*";
}
cout << endl;