**4.16**

#include <iostream>

#include <iomanip>

using namespace std;

int main()

{

int hours;

double rate;

double salary;

cout << "Enter hours worked (-1 to end): ";

while (cin >> hours) {

//End Check

if (hours == -1)

break;

//Positive Hours Check

if (hours <= 0) {

cout << "Illegal Hours Input!\nEnter hours worked (-1 to end): ";

continue;

}

cout << "Enter hourly rate of the employee ($00.00): ";

//Positive Rate Check

while (cin >> rate) {

if (rate <= 0) {

cout << "Illegal Rate Input!\nEnter hourly rate of the employee ($00.00): ";

continue;

} else {

break;

}

}

//Calculate Salary

if (hours <= 40)

salary = hours \* rate;

else

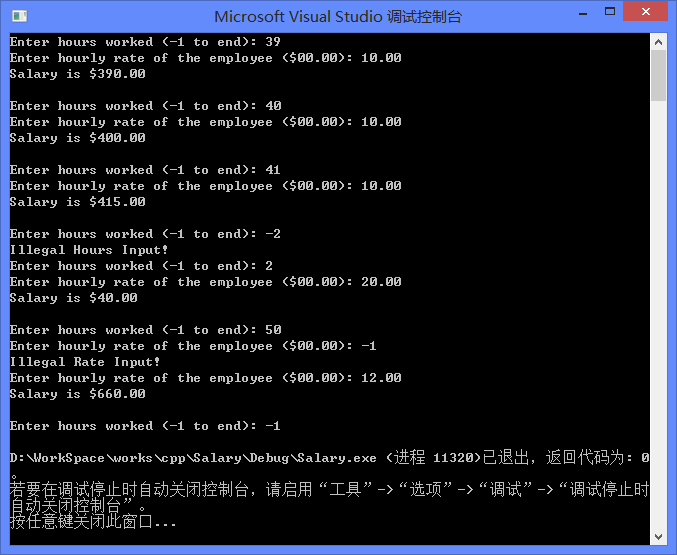
salary = 40 \* rate + (hours - 40) \* rate \* 1.5;

//Output

cout << "Salary is $" << fixed << setprecision(2) << salary << "\n\nEnter hours worked (-1 to end): ";

}

}



**4.25**

#include <iostream>

#include <iomanip>

using namespace std;

int main()

{

int size;

cout << "Enter size of the square (1 to 20): ";

while (cin >> size) {

//Illegal Input Check

if (size < 1 || size > 20) {

cout << "Illegal Size Input!\nEnter size of the square (1 to 20): ";

continue;

}

//Print

for (int i = 0; i < size; i++) {

if (i != 0 && i != size - 1)

//Print midst lines

cout << "\*" << setw(size - 1) << "\*" << "\n";

else {

//Print head and tail

for (int j = 0; j < size; j++)

cout << "\*";

cout << "\n";

}

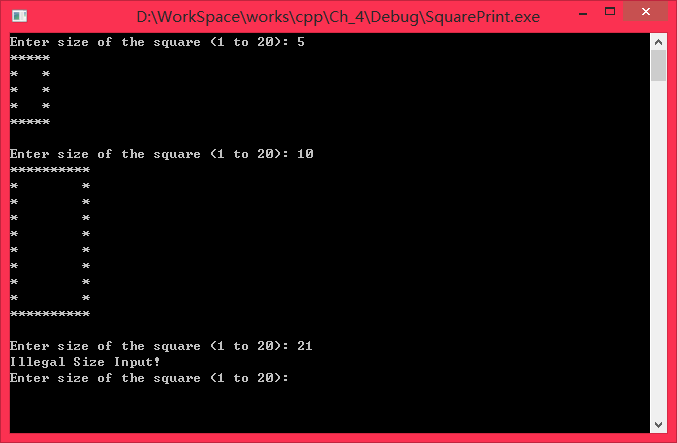
}

//Continue

cout << "\nEnter size of the square (1 to 20): ";

}

}



**4.26**

#include <iostream>

using namespace std;

int main()

{

int origin;//Oirgin number

int reversed = 0;//Reversed number

int temp;

cout << "Enter a positive integer: ";

while (cin >> origin) {

reversed = 0;

//Input Check

if (origin <= 0) {

cout << "Illegal Input!\nEnter a positive integer: ";

continue;

}

//Build reversed number

temp = origin;

while (temp != 0) {

reversed \*= 10;

reversed += temp % 10;

temp /= 10;

}

//Output

cout << origin;

if (origin == reversed)

cout << " is a palindrome.";

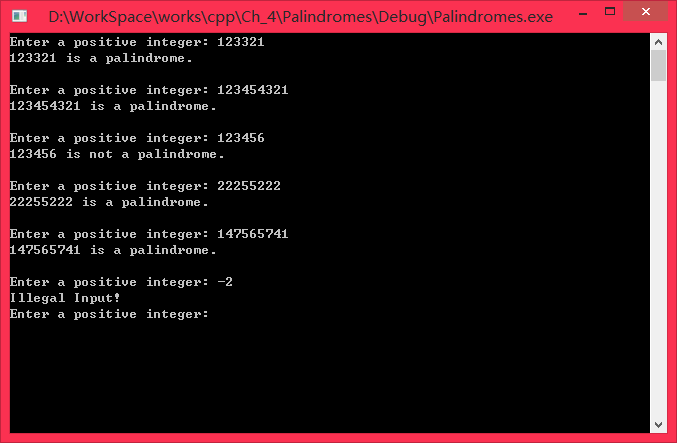
else

cout << " is not a palindrome.";

cout << "\n\nEnter a positive integer: ";

}

}



**4.27**

#include <iostream>

#include <cmath>

using namespace std;

int main()

{

int bin;//binary input

int dec;//decimal output

int temp;

cout << "Enter a binary integer: ";

while (cin >> bin) {

dec = 0;

//Input Check

if (bin < 0 || bin > 111111111) {

cout << "Illegal Input!\nEnter a binary integer: ";

continue;

}

//Calculate

temp = 1;

while (bin != 0) {

//binary check

if (bin % 10 > 1) {

cout << "Illegal Input!\nEnter a binary integer: ";

dec = -1;//sign for illegal input

break;

}

dec += bin % 10 \* temp;

temp \*= 2;

bin /= 10;

}

//Output

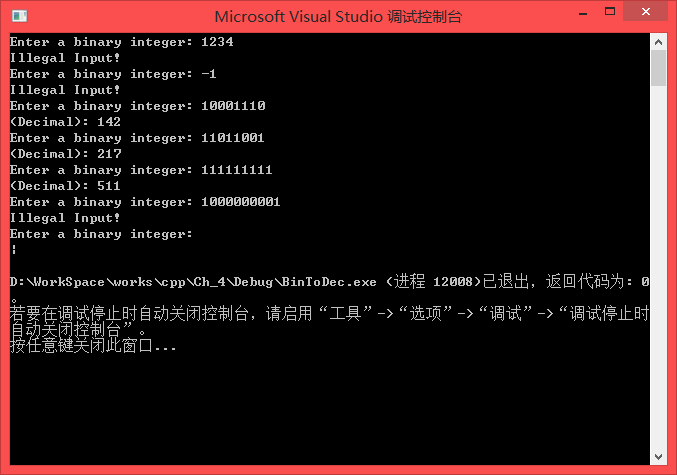
if (dec == -1)

continue;

cout << "(Decimal): " << dec << "\nEnter a binary integer: ";

}

}



**4.34**

#include <iostream>

#include <iomanip>

using namespace std;

int main()

{

char mode;//mode identifier

double x;//input variable

int number;//number for (a)

int accuracy;

double answer;//output

int temp;

double tempx;//temp variable for x

cout << "Enter a character ('a' to print factorial, 'b' to estimate e, 'c' to compute e^x, 'd' to end): ";

while (cin >> mode) {

switch (mode)

{

case 'a'://a) prints factorial

cout << "Enter a number: ";

cin >> number;

//Input Check

if (number < 0) {

cout << "Illegal input!\n";

break;

}

//Calculate

answer = 1;

for (int i = 1; i <= number; i++)

answer \*= i;

cout << "The factorial of " << number << " is " << fixed << setprecision(0) << answer;

break;

case 'b'://b) estimates e

cout << "Enter a number for accuracy: ";

cin >> accuracy;

//Input Check

if (accuracy <= 0) {

cout << "Illegal input!\n";

break;

}

//Calculate

answer = 1;//e = 1 when accuracy = 1

temp = 1;

for (int i = 1; i < accuracy; i++) {

temp \*= i;

answer += 1.0 / temp;

}

cout << "e = " << fixed << setprecision(10) << answer;

break;

case 'c'://c) computes e^x

cout << "Enter a number for accuracy: ";

cin >> accuracy;

//Input Check

if (accuracy <= 0) {

cout << "Illegal input!\n";

break;

}

cout << "Enter x: ";

cin >> x;

//Input Check

if (x <= 0) {

cout << "Illegal input!\n";

break;

}

//Calculate

answer = 1;//e^x = 1 when accuracy = 1

temp = 1;

tempx = 1;

for (int i = 1; i < accuracy; i++) {

temp \*= i;

tempx \*= x;

answer += tempx / temp;

}

cout << "e^x = " << fixed << setprecision(10) << answer;

break;

case 'd'://end

return 0;

default:

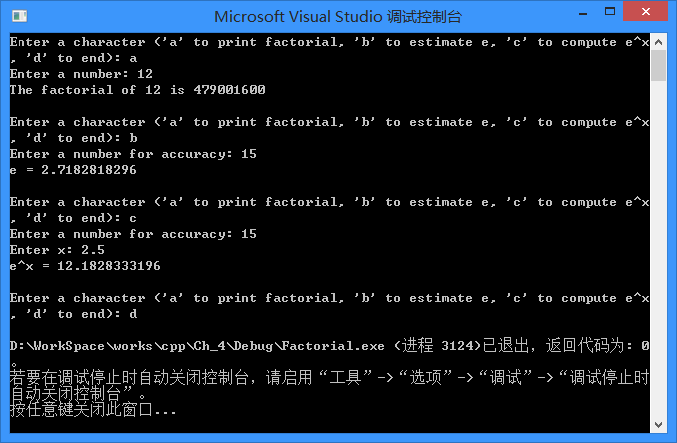
cout << "Illegal input!";

}

cout << "\n\nEnter a character ('a' to print factorial, 'b' to estimate e, 'c' to compute e^x, 'd' to end): ";

}

}



**4. 10-Fig. 4. 16**

#include <iostream>

using namespace std;

int main()

{

int passes = 0;

int failures = 0;

int studentCounter = 1;

int result;

while (studentCounter <= 10) {

cout << "Enter result (1 = pass, 2 = fail): ";

cin >> result;

//Input Check

if (!cin) {

//When input is not a integer

cout << "Illegal Input!\n";

cin.clear();

cin.ignore();

continue;

}

if (result != 1 && result != 2) {

//When input is not 1 or 2

cout << "Illegal Input!\n";

continue;

}

if (result == 1)

passes++;

else

failures++;

studentCounter++;

}

cout << "Passed " << passes << "\nFailed " << failures << endl;

if (passes > 8)

cout << "Bonus to instructor!" << endl;

}

