Q1:

#include <iostream>

#include <iomanip>

using namespace std;

double getInput(string msg){

double value;

while (1) {

cout<<msg;

cin >> value;

if (cin.good()) break; // if value is indeed double then break

else { // otherwise keep prompting

cout << "Invalid Input! Please input a numerical value." << endl;

cin.clear();

cin.ignore(100000, '\n');

}

}

return value; // return value

}

double computeBillingAmount(double totalIncome, int consultingTime, double hourlyRate){

double amount;

if (totalIncome <= 25000){ // if low income

// if consulting time more than 30 mins

if (consultingTime>=30) amount = hourlyRate\*0.40\*(consultingTime-30)/60;

// otherwise

else amount = 0;

}

else{ // if high income

// if consulting time more than 20 mins

if (consultingTime>=20) amount = hourlyRate\*0.70\*(consultingTime-20)/60;

// otherwise

else amount = 0;

}

return amount; // return amount

}

void outputLine(string msg, int msgLen, double amount, int amountLen){

cout<< setw(msgLen);

cout<<msg;

cout<< setw(amountLen);

cout<<"$"<<amount<<endl;

}

int main() {

double income, rate, time, amount;

income = getInput("Enter your income: $");

rate = getInput("Enter the hourly rate: $");

time = getInput("Enter time spent (in minutes): ");

amount = computeBillingAmount(income, time, rate);

cout<<fixed<<setprecision(2);

outputLine("Income: ",18,income,5);

outputLine("Hourly rate: ",18,rate,8);

outputLine("Billing amount: ",18,amount,8);

return 0;

}

Enter your income: $27000

Enter the hourly rate: $34

Enter time spent (in minutes): 400

Income: $27000.00

Hourly rate: $34.00

Billing amount: $150.73

Q2:

#include <iostream>

#include <cmath>

#include <iomanip>

using namespace std;

//function declaration

double windchill(double wind, double temp);

//global variable declaration

double w;

double wind, temp;

//function declaration

void getInput(double& wind,double& temp);

//define main function

int main()

{

//variable declaration

double wind, temp;

//call getInput to get the inputs from user

getInput(wind,temp);

//print the current temperature

cout << "Current temperature: " << temp << "F" << endl;

//print the windchill factor

cout << "Windchill factor " << setprecision(4) << fixed << windchill(wind, temp) << endl;

}

//define a function to egt input from user

void getInput(double& wind,double& temp)

{

//prompt the user to enter wind speed in miles per hour

cout << "Enter the wind speed in miles per hour: ";

//get wind speed

cin >> wind;

//prompt the user to enter the temperature

cout << "Enter the temperature in fahrenheit: ";

//get the temperature

cin >> temp;

}

//define a method to calculate windchill()

double windchill(double V, double T)

{

double w;

//calculate windchill factor

w = 35.74 + 0.6215\*T -35.75\*pow(V,0.16) + 0.4275 \* T \* pow(V,0.16);

//return the value of w

return w;

}

Enter the wind speed in miles per hour: 40

Enter the temperature in fahrenheit: 80

Current temperature: 80F

Windchill factor 82.6632

Q3:

#include<iostream>

using namespace std;

int main() {

int x, n;

cout<<"Enter string size: ";

cin>>n;

//Declare dynamic character array

char \*arr = new char[n];

cout << "Enter a string: ";

for (int i = 0; i < n; i++)

{

//Get the string and store the string in dynamic character array

cin>>arr[i];

}

cout << "Entered string: ";

//Display the entered string

for (x = 0; x < n; x++) {

cout << arr[x];

}

cout<<"\nString in uppercase: ";

//Display the string in uppercase letters

for (x = 0; x < n; x++) {

putchar(toupper(arr[x]));

}

//Free the dynamically allocated array

delete [] arr;

return 0;

}

Enter string size: 8

Enter a string: felicity

Entered string: felicity

String in uppercase: FELICITY%

Q4:

#include <iostream>

#include <string>

#include <iomanip>

using namespace std;

int total(int votes[5]){

int total\_votes=0;

for(int i=0;i<5;i++)

{

total\_votes+=votes[i];

}

return total\_votes;

}

int maxCount(float percent[5]){

int max=0;

for(int i=0;i<5;i++)

{

if(percent[i]>percent[max])

{

max=i;

}

}

return max;

}

int main()

{

string candidates[5];

int votes[5];

float percent[5];

int max,total\_votes=0;

for(int i=0;i<5;i++)

{

cout<<"Enter the last name of candidate "<<i+1<<" and number of votes: ";

cin>>candidates[i]>>votes[i];

cout<<endl;

}

total\_votes=total(votes);

for(int i=0;i<5;i++)

{

percent[i]=(votes[i]/(float)total\_votes)\*100.0;

}

max=maxCount(percent);

cout <<"Candidate"<<"\t"<<"Votes Received"<<"\t"<<"% of Total Votes"<<endl;

cout<<"----------------------------------------"<<endl;

for(int i=0;i<5;i++)

{

cout<<candidates[i]<<"\t\t\t"<<votes[i]<<"\t\t\t"<<fixed<<setprecision(2)<<percent[i]<<endl;

}

cout<<"----------------------------------------"<<endl;

cout<<"Total"<<"\t\t\t\t"<<total\_votes<<endl;

cout << "The Winner of the Election is " <<candidates[max]<<".\n";

return 0;

}

Enter the last name of candidate 1 and number of votes: Johnson 5000

Enter the last name of candidate 2 and number of votes: Miller 4000

Enter the last name of candidate 3 and number of votes: Duffy 6000

Enter the last name of candidate 4 and number of votes: Robinson 2500

Enter the last name of candidate 5 and number of votes: Ashtony 1800

Candidate Votes Received % of Total Votes

----------------------------------------

Johnson 5000 25.91

Miller 4000 20.73

Duffy 6000 31.09

Robinson 2500 12.95

Ashtony 1800 9.33

----------------------------------------

Total 19300

The Winner of the Election is Duffy.