Hw2 q1:

```cpp
#include <iostream>
#include <string>
#include <cmath>
#include <iomanip>
using namespace std;
const double DISCOUNT1 = 0.4;
const double DISCOUNT2 = 0.7;
int main(){
    cout << fixed << showpoint << setprecision(2);
    int hourlyRate = 0;
    double income = 0;
    char incomeType;
    int consultingTime = 0;
    double amount = 0;
    cout << "input your hourly rate, consulting time and \
your yearly income" << endl;
    cin >> hourlyRate >> consultingTime >> income;
    incomeType = (income >= 25000) ? 'n' : 'y';
    if(incomeType == 'y'){
        if(consultingTime <= 30){
            cout << "Free";
        }
        else{
            consultingTime -= 30;
            amount = (double(consultingTime) / 60) * hourlyRate * DISCOUNT1;
            cout << "The service fee is " << amount << endl;
        }
    }
    if(incomeType == 'n'){
        if(consultingTime <= 20){
            cout << "Free";
        }
        else{
            consultingTime -= 20;
            amount = (double(consultingTime) / 60) * hourlyRate * DISCOUNT2;
            cout << "The service fee is " << amount << endl;
        }
    }
    return 0;
}
```

Result:

```
input your hourly rate, consulting time and your yearly income
50
35
12000
The service fee is 1.67
```

```
input your hourly rate, consulting time and your yearly income
1000
10
75000
Free%
```

```
input your hourly rate, consulting time and your yearly income
100
120
50000
The service fee is 116.67
```

Hw2 q2:

```cpp
#include <iostream>
#include <string>
#include <cmath>
#include <iomanip>
using namespace std;
double temp = 0, speed = 0;
void getInput();
void windchill();
int main(){
    getInput();
    windchill();
    return 0;
}
void getInput(){
    cout << "input the temperature and speed" << endl;
    cin >> temp >> speed;
}
void windchill(){
    cout << fixed << showpoint << setprecision(2);
    double res;
    res = 35.74 + 0.6215 * temp - 35.75 * pow(speed, 0.16) + 0.4275 * temp * pow(spe
    cout << "The windchill factor is " << res;
}
```

Result:

```
input the temperature and speed
20
10
The windchill factor is 8.85%
```

Hw2 q3:

```cpp
#include <iostream>
#include <string>
#include <cmath>
#include <iomanip>
using namespace std;
int main(){
    char arr[10000];
    int i = 0;
    cout << "input a string" << endl;
    cin >> arr;
    while(arr[i]){
        if(int(arr[i]) > 90) arr[i] -= 32;
        i++;
    }
    cout << arr;
    return 0;
}
```

Result:

```
input a string
abcdef
ABCDEF%
```

```
input a string
a123dfet
A123DFET%
```

Hw2 q4:

```cpp
#include <iostream>
#include <string>
#include <cmath>
#include <iomanip>
using namespace std;
const int CANDIDATE_NUMBER = 5;
struct candidate{
    string lastName;
    int votes;
};
void printDetail(candidate list[], int totalVotes);
int main(){
    candidate list[CANDIDATE_NUMBER];
    int totalVotes = 0;
    for(int i = 0; i < 5; i++){
        cout << "enter the last name and the number of votes" << endl;
        cin >> list[i].lastName >> list[i].votes;
        totalVotes += list[i].votes;
    }
    printDetail(list, totalVotes);

    return 0;
}
void printDetail(candidate list[], int totalVotes){
    cout << "Candidate" << setw(16) << "Votes Received" << setw(16) << "percentage"
    candidate winner;
    winner.votes = 0;
    cout << fixed << showpoint << setprecision(2);
    for(int i = 0; i < CANDIDATE_NUMBER; i++){
        if(list[i].votes > winner.votes) winner = list[i];
        cout << setw(9) << list[i].lastName << setw(16) << list[i].votes << setw(16)
    }
    cout << "Total" << setw(16) << totalVotes << endl;
    cout << "The winner of the election is " << winner.lastName;
}
```

Result:

```
enter the last name and the number of votes
johnson
5000
enter the last name and the number of votes
miller
4000
enter the last name and the number of votes
duffy
6000
enter the last name and the number of votes
robinson
2500
enter the last name and the number of votes
ashtony
1800
Candidate  Votes Received      percentage
  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%
```