

Lab2 q1:

```
#include <iostream>
#include <string>
#include <cmath>
using namespace std;
bool isVowel(char);
int main(){
    char ch;
    cout << "input a character" << endl;
    cin >> ch;
    bool test = isVowel(ch);
    cout << test << endl;
    return 0;
}

bool isVowel(char ch){
    /*
    .....Function: isVowel
    .....judge if a character is a vowel
    .....Parameters:
    .....ch--char
    .....Returns:
    .....boolean result
    .....*/
    if(ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u') return true;
    else if(ch == 'A' || ch == 'E' || ch == 'I' || ch == 'O' || ch == 'U') return true;
    else return false;
}
```

Result:

```
input a character
A
1
```

Lab2 q2:

```

#include <iostream>
#include <string>
#include <cmath>
using namespace std;
int rever(int);
int main(){
    int number;
    int res;
    cout << "input a number" << endl;
    cin >> number;
    res = rever(number);
    cout << res;
}

int rever(int num){
    int res = 0;
    bool negative = false;
    if(num < 0){
        negative = true;
        num = -num;
    }
    while(num != 0){
        res = res * 10 + num % 10;
        num /= 10;
    }
    if(negative) res = -res;
    return res;
}

```

Result:

```

input a number
-265
-562%

```

Lab2 q3:

```

#include <iostream>
#include <string>
#include <cmath>
using namespace std;

int main(){
    string target;
    string res = "";
    cout << "input a string" << endl;
    getline(cin, target);
    for(int i = 0; i < target.length(); i++){
        switch (target[i])
        {
            case 'a':
            case 'e':
            case 'i':
            case 'o':
            case 'u':
            case 'A':
            case 'E':
            case 'I':
            case 'O':
            case 'U':
                break;
            default:
                res.append(1, target[i]);
        }
    }
    cout << res << endl;;
    return 0;
}

```

Result:

```

input a string
QaYIuq
QYq

```

Lab2 q4:

```

1  #include <iostream>
2  #include <string>
3  #include <cmath>
4  #include <iomanip>
5  using namespace std;
6
7  int main(){
8
9      double arr[50];
10     for(int i = 0; i < 50; i++){
11         if(i < 25) arr[i] = i * i;
12         else arr[i] = 3 * i;
13     }
14     for(int i = 0; i < 50; i++){
15         cout << setw(4) << arr[i] << ' ';
16         if(i % 10 == 9) cout << endl;
17     }
18
19 }

```

Result:

0	1	4	9	16	25	36	49	64	81
100	121	144	169	196	225	256	289	324	361
400	441	484	529	576	75	78	81	84	87
90	93	96	99	102	105	108	111	114	117
120	123	126	129	132	135	138	141	144	147

Lab2 q5:

```

#include <iostream>
#include <string>
#include <fstream>
#include <iomanip>
using namespace std;
const int NO_OR_STUDENTS = 20;

struct studentType
{
    string studentFName;
    string studentLName;
    int testScore;
    char grade;
};

```

```

void getData(ifstream& inFile, studentType sList[], int listSize);
void calculateGrade(studentType sList[], int listSize);
int highestTestscore(studentType sList[], int listSize);
void printHighestStudent(studentType sList[], int listSize, int
highestScore);
int main()

{
    ifstream inData;
    ofstream outData;
    studentType studentList[NO_OR_STUDENTS];
    int highest = 0;
    inData.open("Ch9_Ex2Data.txt");
    if (!inData)
    {
        cout << "The input file does not exist. Program terminates!"
            << endl;
        return 1;
    }

    getData(inData, studentList, NO_OR_STUDENTS);
    calculateGrade(studentList, NO_OR_STUDENTS);
    highest = highestTestscore(studentList, NO_OR_STUDENTS);
    cout << "The highest score is " << highest << endl;
    printHighestStudent(studentList, NO_OR_STUDENTS, highest);
    return 0;
}

void getData(ifstream& inFile, studentType sList[], int listSize)
{
    for (int i = 0; i < listSize; i++)
        inFile >> sList[i].studentFName >> sList[i].studentLName
            >> sList[i].testScore;
}

void calculateGrade(studentType sList[], int listSize)
{
    for (int i = 0; i < listSize; i++)
    {
        switch (sList[i].testScore / 10)
        {
            case 10:
            case 9:

```

```

        sList[i].grade = 'A';
        break;
    case 8:
        sList[i].grade = 'B';
        break;
    case 7:
        sList[i].grade = 'C';
        break;
    case 6:
        sList[i].grade = 'D';
        break;
    case 5:
    case 4:
    case 3:
    case 2:
    case 1:
    case 0:
        sList[i].grade = 'F';
    }
}

int highestTestScore(studentType sList[], int listSize){
    int highest = 0;
    for(int i = 0; i < listSize; i++){
        if (sList[i].testScore > highest) highest = sList[i].testScore;
    }
    return highest;
}

void printHighestStudent(studentType sList[], int listSize, int
highestScore){
    for(int i = 0; i < listSize; i++){
        if(sList[i].testScore == highestScore) cout << sList[i].studentFName +
" " << sList[i].studentLName << endl;
    }
}

```

Result:

```

The highest score is 95
Simba Green
Johnny Jackson
Shelly Malik
Chelsea Tomek
Angela Clodfelter
Allison Nields

```