ESE 2025 - Week 10 Report
Instructor: dr. Takis Zourntos
Student: Vy Nguyen

Introduction:

This assignment produces a program that provides a quiz test for students. One student takes the test at a time, then another one's turn. After finish the test, all students can be ranked in highest to lowest score order.

Discussion

By using the exception (try/throw/catch) algorithm, streams as type for function, and sort() function. Those materials can be found on: https://github.com/takiszourntos/teaching/tree/master/lambton/2020/summer/ese2025/week_10/workspace

Here are the functions and their descriptions:

```
struct student_struct {
	string name;
	int score;
};
typedef student_struct stn_t;

istream& read(istream &is, stn_t &indv) {
	is >> indv.name;
	return is;
}
```

First, the type stn_t is built with two elements: name and score using struct; In the second part, istream is used as a format type for other functions

```
bool result_sorter(stn_t a, stn_t b)
{
	if (a.score > b.score)
		return true;
	else
		return false;
}
```

In the function above, it will return the value true or false if the condition is correct, this case, if the score of student a is higher than b's, function returns true.

Below is the function that contains the first question:

```
int quiz1(int score)
{
	float ans1;
	cout << "First Question: What is the decimal number of this floating point number: \n";
	cout << " (+)0.1101101x2^4 " << endl;
	cin >> ans1;
	if (ans1 != 13.625)
	{
		throw logic_error("Wrong answer");
		return score;
	}
	else
```

```
        {
                cout << "Correct" << endl;
                score += 5;
        }
        return score;
}
```

Second question:

```
int quiz2(int score)
{
        bool ans2;
        cout << "Second Question: Is dr. Takis Zourntos a strict Professor? Type: 1 or 0  "
             << endl;
        cin >> ans2;
        if (ans2)
        {
                cout << "Correct!\n";
                score += 5;
        }
        else
                throw logic_error("Wrong answer");
        return score;
}
```

Third question:

```
int quiz3(int score)
{
        int ans3;
        cout << "Third question: 11^2 = ? :" << endl;
        cin >> ans3;
        if (ans3 == 121)
        {
                cout << "Correct! \n";
                score += 5;
        }
        else
                throw logic_error("Wrong answer");
        return score;
}
```

Next is the test function

The type of this function is the stn_t with the input of stn_t a. Which means the function will receive the input information of a student (name and score). Then runs some commands then return the new data of this student.

```
/*Test function*/
stn_t test(stn_t a)
{
	int score = 0;
	try {
		score = quiz1(score);
	} catch (logic_error str) {
		cout << str.what() << endl;
	}
	cout << "Your score: " << score << endl;
	try {
		score = quiz2(score);
	} catch (logic_error str1) {
		cout << str1.what() << endl;
	}
	cout << "Your score: " << score << endl;
	try {
		score = quiz3(score);
	} catch (logic_error str2) {
		cout << str2.what() << endl;
	}
	/*Displaying the score and return score of the individual*/
	cout << "Your score: " << score << endl << endl;
	a.score = score;
	return a;
}
```

Finally, the main function will include the input of each student taking the exams, quiz tests, sorting, and displaying the results.

```
int main()
{
	vector<stn_t> victims;
	stn_t indv;
	cout << "Enter your name and take the test" << endl;
	cout << "Press Ctrl + D when done" << endl << endl;
	/*Looping and taking exam for each student*/
	while (read(cin, indv))
	{
		indv = test(indv);
		victims.push_back(indv);
		cout << "Student Name: " << indv.name << "--- Score: " << indv.score
			<< endl << endl;
	}
	/*Sorting and Displaying the result.*/
	sort(victims.begin(), victims.end(), result_sorter);
	cout << " The Results are: " << endl;
	for (vector<stn_t>::size_type ii = 0; ii != victims.size(); ++ii)
	{
		cout << "Student: " << victims[ii].name << "---Score: "
			<< victims[ii].score << endl;
	}
	return 0;
}
```

Summary:
To summarize, the built-in function and libraries of C++ have many helpful tools that can help us to build a specific program with faster and fewer steps. Recommend for this assignment: Try to increase the difficulty of the quiz by adding the timer aspect.

Appendix

```
//============================================================================
// Name        : Quiztest.cpp
// Author      : Vy
// Version     :
// Copyright   : Your copyright notice
// Description :Quiz test in C++, Ansi-style
//============================================================================

#include <iostream>
#include <vector>
#include <stdexcept>
#include <algorithm>

using namespace std;

struct student_struct {
	string name;
	int score;
};
typedef student_struct stn_t;

istream& read(istream &is, stn_t &indv) {
	is >> indv.name;
	return is;
}

/*Sorter function*/
bool result_sorter(stn_t a, stn_t b) {
	if (a.score > b.score)
		return true;
	else
		return false;
}

/*First question*/
int quiz1(int score)
{
	float ans1;
	cout << "First Question: What is the decimal number of this floating point
number: \n";
	cout << " (+)0.1101101x2^4 " << endl;
	cin >> ans1;
	if (ans1 != 13.625)
	{
		throw logic_error("Wrong answer");
		return score;
	}
	else
	{
		cout << "Correct" << endl;
		score += 5;
	}
```

```
	return score;
}

/*Second Question */
int quiz2(int score)
{
	bool ans2;
	cout << "Second Question: Is dr. Takis Zourntos a strict Professor? Type: 1= yes,
0 = no "<< endl;
	cin >> ans2;
	if (ans2)
	{
		cout << "Correct!\n";
		score += 5;
	}
	else
		throw logic_error("Wrong answer");
	return score;
}

/*Third Question*/
int quiz3(int score)
{
	int ans3;
	cout << "Third question: 11^2 = ? :" << endl;
	cin >> ans3;
	if (ans3 == 121)
	{
		cout << "Correct! \n";
		score += 5;
	}
	else
		throw logic_error("Wrong answer");
	return score;
}

/*Test function*/
stn_t test(stn_t a)
{
	int score = 0;
	try {
		score = quiz1(score);
	} catch (logic_error str) {
		cout << str.what() << endl;
	}
	cout << "Your score: " << score << endl;
	try {
		score = quiz2(score);
	} catch (logic_error str1) {
		cout << str1.what() << endl;
	}
	cout << "Your score: " << score << endl;
	try {
```

```
                score = quiz3(score);
        } catch (logic_error str2) {
                cout << str2.what() << endl;
        }
        /*Displaying the score and return score of the individual*/
        cout << "Your score: " << score << endl << endl;
        a.score = score;
        return a;
}

/*Main Function*/
int main()
{
        /*Variables declaration*/
        vector<stn_t> victims;
        stn_t indv;
        cout << "Enter your name and take the test" << endl;
        cout << "Press Ctrl + D when done" << endl << endl;
        /*Looping and taking exam for each student*/
        while (read(cin, indv))
        {
                indv = test(indv);
                victims.push_back(indv);
                cout << "Student Name: " << indv.name << "--- Score: " << indv.score
                                << endl << endl;
        }
        /*Sorting and Displaying the result.*/
        sort(victims.begin(), victims.end(), result_sorter);
        cout << " The Results are: " << endl;
        for (vector<stn_t>::size_type ii = 0; ii != victims.size(); ++ii)
        {
                cout << "Student: " << victims[ii].name << "---Score: "
                                << victims[ii].score << endl;
        }
        return 0;
}
```