OOP with C++

Assignment 5

This assignment is individual assignment, every student should submit by himself.

Due: Next Section

1. True or False:

a. With namespace you can divide global scope to sub-scopes, each one with its own name.

b. It's recommended to use If-else statement to handle exceptions.

c. Try-catch statements are used to handle syntax errors in C++.

d. Throw keyword can only throw an integer value.

e. You can have only one catch statement for every try statement.

f. If you have different classes A, B then C++ can perform implicit casting between objects of A and B.

g. You can use fstream to open files in text mode only.

h. dynamic_cast is always successful when we cast a class to one of its base classes.

i. static_cast can perform conversions between pointers to related classes, not only from the derived class to its base

j. `#define` allocates 2 bytes only to store float number compared to the `float` data type.

2. What is the expected output for the following C++ program?

```
1   #include <iostream>
2   using namespace std;
3   namespace first{
4         int x = 5;
5   }
6   namespace second{
7   double x = 3.1416;
8   }
9   int main () {
10        int x=10;
11        cout << first::x << endl;
12        cout << x << endl;
13        using namespace second;
14        cout<<x<<endl;
15  return 0;
16  }
```

3. Using fstream write a file manager base class with the name `fman`. **Then drive two classes** `mfile` **and** `mdir` **to manipulate files and directors where** `mfile` **has the following methods:**

```
a. copy file
b. cut file
c. delete file
```

and `mdir` **has the following methods:**

```
a. create directory (folder)
b. delete directory
c. copy directory
d. cut directory
```

4. Create a new C++ project to run the following program then answer the questions:

```
1    #include <iostream>
2    #include <vector>
3    using namespace std;
4
5    int main() {
6
7        try {
8            cout << "Creating a vector of size 5... \n";
9            vector<int> v(5);
10           cout << "Accessing the 11th element of the vector...\n";
11           cout << v.at(10); // vector::at() throws std::out_of_range
12       } catch (const std::exception& e) { // caught by reference to base
13           cout << " a standard exception was caught, with message '"
14                   << e.what() << "'\n";
15       }
16
17   }
```

a. **What is the expected output of this program?**
b. **Replace line 9 with** `vector<int> v(15);` **, and then run the program and report the output.**

5. Write a C++ `calendar` **class which has a two methods to display date, and time using C++ standard macros.**

6. Write a C++ `Manlist` **class which has a dynamic array** `data` **of size defined by the user. The Class has the following methods:**

a. `insert:` **to insert an element at the end of the array data**
b. `remove:` **to remove the last element at the end of the array data**
c. `insertAt:` **to insert an integer at a specific position of the array data**
d. `removeAt:` **to remove an element at a specific position of the array data**