C201 / I211

Exception Handling

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What is an Exception?

- An exception is simply an error.

- Exception handling simply means a way to handle (catch) an exception and resolve the problem gracefully.
try {
    try running this block of code
    // if (error condition is found)
    // throw an exception of a given data-TYPE
}

catch (TYPE error_variable) {
    // do something about the error of this TYPE
}
What happens when we “throw” an exception?

- The first time an exception is found, and a "throw" statement is called, the execution in the "try" block is suspended and the "catch" blocks are searched sequentially to find the right error TYPE or find a default exception handler.
Example:

```c
void main()
{
    int a = 1;      // -1;
    double b = -2;  // 2
    char c = 'A';   // 'B'
    try
    {
        // try running the code below and as soon
        if (a < 0)
            throw a; //catch int
        if (b < 0)
            throw b; //catch ...
        if (c == 'A')
            throw c; //catch char
    }
    catch (int e) {
        cout << "Int Exception: Value < 0 " << e << endl;
    }
    catch (char e) {
        cout << "Char Exception: Value = 'A' " << e << endl;
    }
    catch (...) { // Default exception handler
        cout << "Unknown exception" << endl;
    }
    cout << "Line After Exception" << endl;
    system("pause");
}
```

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