**DSAP HW2**

B05703100 財金三 郭仲嘉

第一題

(a)

#include <iostream>

#include <stdexcept>

using namespace std;

int getArrayElement(const int array[], int len, int index) throw(out\_of\_range);

int main()

{

const int LEN = 10;

int array[LEN] = {0};

for(int i = 0; i < LEN; i++)

cin >> array[i];

int index = 0;

cin >> index;

try

{

int result = getArrayElement(array, LEN, index);

cout << result << endl;

}

catch(out\_of\_range e)

{

cout << "Bad Index!";

}

return 0;

}

int getArrayElement(const int array[], int len, int index) throw(out\_of\_range)

{

if (index < 0 or index >= len) throw out\_of\_range("...");

return array[index];

}

(b)

template <typename arrayType>

arrayType getArrayElement(const arrayType array[], int len, int index) throw(out\_of\_range);

//main function…

template <typename arrayType>

arrayType getArrayElement(const arrayType array[], int len, int index) throw(out\_of\_range)

{

if (index < 0 or index >= len) throw out\_of\_range("...");

return array[index];

}

(c)

template <typename arrayType>

arrayType getArrayElement(const arrayType array[], int len, int index) throw(out\_of\_range)

{

if (index < -len + 1 or index >= len) throw out\_of\_range("...");

if (index >= 0) return array[index];

else return array[len - 1 + index];

}

(d)

1. 若要處理物件的array，應該傳入該array的reference。若直接傳該array，函數會生成另一個物件array，較費時且若沒寫copy constructor可能shallow copy

2. 函數若要回傳物件，也要注意shallow copy問題

3. 若要以一個物件變數接住回傳值，要overload等號