計算機程式語言

作　　業　　二

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原始程式檔名	HW02_002.cpp (_ = [A-D])

評　分　項　目

分數比重	項　　目	得　分
40%	程式是否能正確執行?	
40%	程式之使用者介面與輸出結果?	
	是否有繳交原始程式檔與執行檔?	
	程式中的註解是否恰當?	
	程式之結構與邏輯是否正確?	
	程式碼的格式是否合乎要求?	
20%	程式之綜合評分	
總　分		

評語:

A.

```
//============================================================
//  PROGRAMMER  : 潘廣霖
//  DATE        : 2015-10-08
//  FILENAME    : HW02A002.CPP
//  DESCRIPTION : This is a program to print information about three
integers
//============================================================

#include "stdafx.h"
#include<iostream>
#include<algorithm>
#include<cstdlib>
// make use of the max/min function in std::algorithm
// ref: http://stackoverflow.com/q/19897722/2281355
#define max3(a, b, c) max(max(a, b), c)
#define min3(a, b, c) min(min(a, b), c)
using namespace std;

int main(int argc, _TCHAR* argv[]) {
  int a, b, c;
  cout << "Input three different integers: ";
  cin >> a >> b >> c;
  int sum = a + b + c;
  cout << "Sum is "             << sum           << endl;
  cout << "Average is "         << (sum / 3.0)   << endl;
  cout << "Product is "         << (a * b * c)   << endl;
  cout << "Smallest number is " << min3(a, b, c) << endl;
  cout << "Largest number is "  << max3(a, b, c) << endl;

  system("pause");
  return 0;
}
```

B.

```
//============================================================
//  PROGRAMMER  : 潘廣霖
//  DATE        : 2015-10-08
//  FILENAME    : HW02B002.CPP
//  DESCRIPTION : This is a program to estimate the temperature of a fridge
since a power failure
//============================================================

#include "stdafx.h"
#include<iostream>
#include<cstdlib>
#include<cmath>
using namespace std;

int main(int argc, _TCHAR* argv[]) {
  int hh, mm;
  cout << "Enter time since power failure (<hour> <minute>): ";

  cin >> hh >> mm;
  double t = hh + mm / 60.0;
  // formula given in the question
  double ans =  4 * t * t / (t + 2) - 20;

  cout << endl << "Estimated T is " << ans << ". " << endl;
  system("pause");
  return 0;
}
```

C.

```
//=============================================================
//  PROGRAMMER  : 潘廣霖
//  DATE        : 2015-10-08
//  FILENAME    : HW02C002.CPP
//  DESCRIPTION : This is a program to calculate BMR and express it in
numbers of chocolate bars.
//=============================================================

#include "stdafx.h"
#include<iostream>
#include<cstdlib>
#include<cmath>
using namespace std;

int main(int argc, _TCHAR* argv[]) {
  double weight, height, age;
  char gender;
  cout << "Enter your weight (in kg): ";
  cin >> weight;
  cout << "Enter your height (in cm): ";
  cin >> height;
  cout << "Enter your age (in year): ";
  cin >> age;
  // M for male and F for female
  cout << "Enter your gender (M / F): ";
  cin >> gender;

  double bmr;
  // accepts both uppercase and lowercase
  if (gender == 'M' || gender == 'm')
    bmr = 66.5 + 13.75 * weight + 5.003 * height - 6.755 * age;
  else if (gender == 'F' || gender == 'f')
    bmr = 655 + 9.563 * weight + 1.850 * height - 4.676 * age;
  else {
    // input invalid
    cout << "Please enter either M or F for your gender! Exiting..." <<
endl;
    return 0;
  }

  cout << "You need to eat "
       << bmr / 230
       << " chocolate bar(s) at least to maintain your life."
       << endl;

  system("pause");
  return 0;
}
```

D.

```
//============================================================
//  PROGRAMMER  : 潘廣霖
//  DATE        : 2015-10-08
//  FILENAME    : HW02D002.CPP
//  DESCRIPTION : This is a program to help calculate the sum of 3 cards in
a blackjack game
//============================================================

#include "stdafx.h"
#include<iostream>
#include<cstdlib>
#include<cmath>
// not to rely on the max function in std::algorithm
#define min(a, b) ((a) < (b) ? (a) : (b))
using namespace std;

int main(int argc, _TCHAR* argv[]) {
  int a, b, c, sum = 0;

  // 1 for A, 2 for 2, ..., K for 13
  cout << "Enter three cards in a blackjack game [1 ~ 13]: ";
  cin >> a >> b >> c;

  // treat 1 as one point
  int ace = (int)(a == 1 || b == 1 || c == 1);

  // this statement is equivent to
  // if (a > 10) sum += 10; else sum += a;
  // ... for b and c
  sum += min(a, 10) + min(b, 10) + min(c, 10);

  // promote ace to 11 points if the result does not exceed 21.
  // there is no need to handle multiple aces(?),
  // because it will not satisfy the condition.
  if (sum <= 11 && ace) sum += 10;

  cout << "These cards yield " << sum << " point(s)." << endl;

  system("pause");
  return 0;
}
```