Sekolah Pendidikan Profesional dan Pendidikan Berterusan (SPACE)

UNIVERSITI TEKNOLOGI MALAYSIA

FINAL EXAM / *PEPERIKSAAN AKHIR*
SEMESTER II – SESSION 2021 / 20122
PROGRAM KERJASAMA

COURSE CODE : DDWD1603 / DDWC1603
KOD KURSUS

COURSE NAME : C++ PROGRAMMING
NAMA KURSUS *PENGATURCARAAN C++*

YEAR / PROGRAMME : 1 DDWD
TAHUN / PROGRAM

DURATION : 3 HOURS (INCLUDING SUBMISSION HOUR)
TEMPOH *3 JAM (TERMASUK MASA PENGHANTARAN)*

DATE : JUN / JUL 2022
TARIKH

INSTRUCTION /*ARAHAN*

1. The question paper consists of 4 sections: A, B and C.
   Kertas soalan terdiri daripada 4 bahagian: A, B dan C..

2. Answer **ALL** questions and write your answer on the answer sheet.
   *Jawab **SEMUA** soalan dan tulis jawapan anda pada kertas jawapan.*

3. Write your name, matric no., identity card no., course code, course name, section no. and lecturer's name on the first page (in the upper left corner) and every page thereafter on the answer sheet.
   Tulis nama anda, no. matrik, no. kad pengenalan, kod kursus, nama kursus, no. seksyen dan nama pensyarah pada muka surat pertama (penjuru kiri atas) kertas jawapan dan pada setiap muka surat jawapan.

4. Each answer sheet must have a page number written at the bottom right corner.
   Setiap helai kertas jawapan mesti ditulis nombor muka surat pada bahagian bawah penjuru kanan.

5. Answers should be handwriting, neat and clear.
   Jawapan hendaklah ditulis tangan, kemas dan jelas menggunakan huruf cerai.

This examination paper consists of 14 pages including the cover
Kertas soalan ini mengandungi 14 muka surat termasuk kulit hadapan

ONLINE EXAMINATION RULES AND REGULATIONS
PERATURAN PEPERIKSAAN SECARA DALAM TALIAN

1. Student must carefully listen and follow instructions provided by invigilator.

   Pelajar mesti mendengar dan mengikuti arahan yang diberikan oleh pengawas peperiksaan dengan teliti.

2. Student is allowed to start examination only after confirmation of invigilator if all needed conditions are implemented.

   Pelajar dibenarkan memulakan peperiksaan hanya setelah pengesahan pengawas peperiksaan sekiranya semua syarat yang diperlukan telah dilaksanakan.

3. During all examination session student has to ensure, that he is alone in the room.

   Semasa semua sesi peperiksaan pelajar harus memastikan bahawa dia bersendirian di dalam bilik.

4. During all examination session student is not allowed to use any other devices, applications except other sites permitted by course lecturer.

   Sepanjang sesi peperiksaan pelajar tidak dibenarkan menggunakan peranti dan aplikasi lain kecuali yang dibenarkan oleh pensyarah kursus.

5. After completing the exam student must inform invigilator via the set communication platform (eg. WhatsApp etc.) about completion of exam and after invigilator's confirmation leave examination session.

   Selepas peperiksaan selesai, pelajar mesti memaklumkan kepada pengawas peperiksaan melalui platform komunikasi yang ditetapkan (contoh: Whatsapp dan lain-lain) mengenai peperiksaan yang telah selesai dan meninggalkan sesi peperiksaan selepas mendapat pengesahan daripada pengawas peperiksaan.

6. Any technical issues in submitting answers online have to be informed to respective lecturer within the given 30 minutes. Request for re-examination or appeal will not be entertain if complains are not made by students to their lecturers within the given 30 minutes.

   Sebarang masalah teknikal dalam menghantar jawapan secara dalam talian perlu dimaklumkan kepada pensyarah masing-masing dalam masa 30 minit yang diberikan. Permintaan untuk pemeriksaan semula atau rayuan tidak akan dilayan sekiranya aduan tidak dibuat oleh pelajar kepada pensyarah mereka dalam masa 30 minit yang diberikan.

7. During online examination, the integrity and honesty of the student is also tested. At any circumstances student is not allowed to cheat during examination session. If any kind of cheating behaviour is observed, UTM have a right to follow related terms and provisions stated in the respective Academic Regulations and apply needed measures.

   Semasa peperiksaan dalam talian, integriti dan kejujuran pelajar juga diuji. Walau apa pun keadaan pelajar tidak dibenarkan menipu semasa sesi peperiksaan. Sekiranya terdapat sebarang salah laku, UTM berhak untuk mengikuti terma yang dinyatakan dalam Peraturan Akademik.

Excerpts from online final exam guidelines
Petikan daripada panduan peperiksaan akhir dalam talian
Universiti Teknologi Malaysia

SECTION A: OBJECTIVE [30 MARKS]
BAHAGIAN A: OBJEKTIF [30 MARKAH]

Instruction: Write your answers in the spaces provided in attachment answer script.

Arahan: Tuliskan jawapan di ruang yang disediakan di dalam kertas jawapan yang di lampirkan.

1. What is the output produced by the following program segment?

   Apakah keluaran yang dihasilkan oleh segmen aturcara berikut?

   ```
   int  x = 0;
   while (x > 7){
       cout << x << " ";
         ++x;
   }
   ```

   A. 0 1 2 3 4 5 6

   B. 0 1 2 3 4 5 6 7

   C. 0 0 0 0 …

   D. Nothing / *Tiada keluaran*

2. How many times does the **cout** statement in the following code execute?

   *Berapa kali penyataan **cout** di dalam kod berikut dilaksanakan?*

   ```
   int a=2;
   int b=2;
   while (a<10)
       for (int b=0; b<4; b++){
           cout << a << " " << b << " ";
           a++;
       }
   ```

   A. 8

   B. 10

   C. 16

   D. infinitely / *tak terhingga*

3. The **break** statement can be used in _____.

   *Penyataan **break** boleh digunakan dalam _____.*

   A. while

   B. for

   C. do..while

   D. All of the above / *kesemua di atas*

4. What is the output of the following C++ code?

   Apakah output kod C++ berikut?

   ```
   int markah[5] = {40, 66, 74, 88, 33};
   int bil=0;
   for (bil = 0; bil < 5; bil++)
           cout<< markah[bil] << " ";
   cout<<endl;
   ```

   A. 0 1 2 3 4   C.   40 66 74 88 33
   B. 0 5 10 15   D.   0 40 66 74 88

5. Which operator is suitable for the concatenation function of a string class?

   Operator mana yang sesuai untuk fungsi gabungan kelas rentetan?

   A. + operator
   B. & operator
   C. − operator
   D. > operator

6. Each C++ program MUST a function named _____.

   Setiap aturcara C++ MESTI mempunyai fungsi bernama _____.

   A. begin
   B. start
   C. main
   D. return

7. Which is the TRUE calling function to calculate 4 * 4 * 4?

   *Manakah panggilan fungsi yang BENAR untuk mengira 4 * 4 * 4?*

   A. pow (4.0, 3.0)
   B. pow (3.0, 4.0)
   C. power (3.0, 4.0)
   D. power (4.0, 3.0)

8. What is the value of **y** that will be displayed when the **cout << y;** statement is executed?

   *Apakah nilai **y** yang akan dipaparkan apabila pernyataan **cout << y;** dilaksanakan?*

   A. 3
   B. 4
   C. 33
   D. 44

   ```
   3 ..
   4 int no=3;
   5 int y;
   6 y=no++;
   7 cout << y;
   8 ..
   ```

9. What is the value of **y** that will be displayed when the **cout << y;** statement is executed?

   Apakah nilai y yang akan dipaparkan apabila pernyataan cout << y; dilaksanakan?

   A. 3

   B. 4

   C. 33

   D. 44

```
3 ..
4 int no=3;
5 int y;
6 y=++no;
7 cout << y;
8 ..
```

10. Which of the following correctly declares an array of size 5?

    Yang mana satu benar berkenaan pengisytiharkan satu tatasusunan bersaiz 5?

    A. int array [5];

    B. int array [ ]={0,1, 2, 3, 4, 5};

    C. int array {5};

    D. array size[5];

11. For finding the size of a string, which function is used?

    Untuk mencari saiz satu rentetan, fungsi mana yang digunakan?

    A. stringlength()

    B. strlen()

    C. str_len()

    D. getlength()

12. Which of the following is used to create a stream that performs both input and output operations?

    Antara berikut, yang manakah digunakan untuk membuat aliran yang melakukan operasi input dan output?

    A. ofstream

    B. ifstream

    C. fstream

    D. iostream

13. Which of the following is the correct syntax to print the message in C++ language?

    Manakah antara berikut sintaks yang betul untuk memaparkan message dalam Bahasa C++?

    A. cout <<"Hello world!";

    B. Cout << Hello world! ;

    C. Out <<"Hello world!;

    D. None of the above

14. Which of the following accesses the fifth element stored in array?

    Antara berikut, yang manakah mengakses elemen kelima yang disimpan dalam susunan?

    A. array;

    B. array[5];

    C. array[4];

    D. array[FIVE];

15. Based on the code segment, how many time will the "hello world" message be displayed?

    Berdasarkan segment aturcara berikut, berapa kalikah mesej "hello world" akan dipaparkan?

    A. 1

    B. 2

    C. 3

    D. 4

```
3   void display(void);
4   int main()
5   {
6           display();
7           display();
8           cout << "hello world\n";
9           return 0;
10  }
11  void display()
12  {
13          cout << "hello world\n";
14  }
```

SECTION B: STRUCTURE [50 MARKS]

BAHAGIAN B: STRUKTUR [50 MARKAH]

Instruction: Write your answers in the spaces provided in attachment answer script.

Arahan: Tuliskan jawapan di ruang yang disediakan di dalam kertas jawapan yang di lampirkan.

QUESTION 1 / *SOALAN 1*

The following are list of variable or constant declaration. Identify whether the declaration is valid or invalid. Give reason if it is invalid. **[7M]**

Berikut adalah senarai pengisytiharaan pembolehubah atau pemalar. Kenalpasti samada pengisytiharaan tersebut adalah sah atau tidak. Nyatakan sebab jika ia tidak sah.

Declaration / *Pengistiharaan*	Valid or Invalid/ *Sah atau Tidak Sah*	Reason if invalid/ *Sebab jika tidak sah*
Int umur = 21;		
double mark;		
constant int NO_OF_ROOM = 6;		
int break;		
double room size = 20.3;		
double room, size;		
int length_1;		

QUESTION 2 / *SOALAN 2*

a) Based on instruction given as comment, write the suitable C++ statements. **[5M]**

   Berdasarkan pada arahan yang diberi dalam bentuk komen, tulis penyataan C++ yang sesuai.

```
//****************************************************************************
// Program Calculate area of sphere
// using the formula surface area for sphere is 4πr²
// where π is 3.142
//****************************************************************************
#include <iostream>
#include <cmath>
using namespace std;
int main ()
{

  i)_____ //define a constants name PIE type double and contain value 3.142

  ii)_____ //declare double variables name radius and area

  cout << "Enter radius:  ";

  iii)_____ ////  read user input and store in variable radius

  iv)_____ // calculate area

  v) _____ //display the area

     return 0;
}
```

b) What output will be produced by the following code? [2M]

Apakah output yang akan dihasilkan oleh kod berikut?

```
for (int i=6; i>1; i--){
    cout << i << endl;
}
```

QUESTION 3 / *SOALAN 3*

a) Using **while** loop please write code fragment to display a list of number from 10 to 100 [3M]

*Menggunakan gelung **while** sila tuliskan keratan kod yang memaparkan senarai nombor dari 10 hingga 100.*

b) Identify TWO (2) errors in the **if** statement below and make correction on the indicated statements.

[4M]

*Kenalpasti DUA (2) kesalahan di dalam penyataan **if** di bawah dan lakukan pembetulan ke atas penyataan yang dimaksudkan.*

```
#include <iostream>
using namespace std
int main () {
int num = 10;
        if (num % 2 = 0)
        {
            cout<<"It is even number";
        }
    return 0;
}
```

c) Transform the **switch** statement program below into an if statement. [3M]

*Tukarkan penyataan **switch** di dalam program di bawah kepada penyataan **if**.*

```
#include <iostream>
using namespace std;
int main () {
    int num;
    cout<<"Enter a number to check course:";
    cin>>num;
    switch (num)
    {
        case 1:
                cout<<"Computer Science";
                break;
        case 2:
                cout<<"Business";
                break;
        default:
                cout<<"Other";
                break;
    }
}
```

d)   What output will be produced by the following code?   **[5M]**

Apakah output yang akan dihasilkan oleh kod berikut?

```
int j=23;
while(j<45)
{
        j+=2;

        if(j==27)
                continue;
        if(j==37)
                break;
        cout << j <<endl;
}
```

QUESTION 4 / *SOALAN 4*

a)   Given the following program:

Diberi program berikut.:

```cpp
#include<iostream>
using namespace std;
void swap(int *x, int *y)
{
 int temp;
 temp =*x;
 *x=*y;
 *y= temp;
}
    int main()
    {
    int x=500, y=100;
     swap(&x, &y);
     cout<<"Value of x is: "<<x<<endl;
     cout<<"Value of y is: "<<y<<endl;
     return 0;
    }
```

Write the output of the program.   **[3M]**

Tuliskan output bagi program

b) What will be the output produced by the following code? **[3M]**

Apakah output yang akan dihasilkan oleh kod berikut?

```cpp
#include<iostream>
using namespace std;
void swap(int x, int y)
{
 int temp;
     temp =x;
     x=y;
     y= temp;
}

   int main()
   {
   int x=500, y=100;
   swap(x, y);
   cout<<"Value of x is: "<<x<<endl;
   cout<<"Value of y is: "<<y<<endl;
   return 0;
   }
```

QUESTION 5 / *SOALAN 5*

a) Declare an array type **double** named **weight** to store five weight value where the input values in the initial value is 66.8, 45.2, 88, 71.5, 65.9 **[2M]**

*Isytiharkan satu tatasusunan berjenis **double** bernama **weight** untuk menyimpan lima nilai elemen dimana nilai input dalam tatasusunan 66.8, 45.2, 88, 71.5, 65.9*

b) Write statements to display the average value in array **weight** above. **[3M]**

*Tulis penyataan-penyataan untuk memaparkan nilai purata dalam tatasusunan **weight** di atas.*

c) Refer to above array **weight**, write a statements to switch between third and fifth item value in array. (where the fifth element will be 88 and the third element will be 65.9) **[3M]**

*Rujuk pada tatasusunan **weight** di atas, tulis pernyataan untuk menukar antara nilai item ketiga dan kelima dalam susunan. (di mana elemen kelima akan menjadi 88 dan elemen ketiga adalah 65.9)*

d) Write the output of the program fragment below: **[2M]**

Tuliskan output keratan aturcara di bawah:.

```cpp
#include <iostream>
using namespace std;
enum week { Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday };
int main()
{
   week day;
   day = Friday;
   cout << "Day: " << day+1<<endl;
   return 0;
}
```

QUESTION 6 / *SOALAN 6*

Based on instruction given as comment, write the suitable C++ statements. **[5M]**

Berdasarkan pada arahan yang diberi dalam bentuk komen, tulis penyataan C++ yang sesuai.

```cpp
//*********************************************************************************
// Program to read a series of mark value in a file and determine whether the mark is
// pass or fail. The program will display the mark and its status on screen.
// Passing mark is 40
//*********************************************************************************
#include <iostream>

i)_____ //include header for file input

using namespace std;
int main ()
{
//declare file
ii) _____ //declare a file variable name markFile
int mark;
iii) _____//open the file name markData.txt as input file

if(markFile.fail()) //check error
     {
     cout << "Error opening file" <<endl;
     return 0;
     }

while ( iv)_____) // while there is data in file
     {

     markFile >> mark;
     if(mark > 40)
          cout<< mark << " – Pass" <<endl;
     else
          cout<< mark << " – Fail" <<endl;
     }
 v)_____ //close the file

}
```

SECTION C: PROGRAMMING [20 MARKS]

BAHAGIAN C: PENGATURCARAAN [20 MARKAH]

Instruction: Write your answers in the spaces provided in attachment answer script.

Arahan: Tuliskan jawapan di ruang yang disediakan di dalam kertas jawapan yang di lampirkan.

Write a complete program.

Tuliskan satu aturcara lengkap.

PROGRAM 1 / *ATURCARA 1*   **[10M]**

GeniusBook Sdn. Bhd. supplies a variety of books to their customer. A special discount will be given to their customer based on the quantity of book purchased. The discount will be determined based on the table below. The total price of book can be computed by multiplying quantity and price after discount. Write a program that prompts the user to enter the quantity of books purchased and the price. Then find the amount of the discount and the total price of the purchase after the discount. Display all the results.

GeniusBook Sdn. Bhd. Membekalkan pelbagai buku kepada pelanggan mereka. Diskaun khas akan diberikan kepada pelanggan mereka berdasarkan jumlah buku yang dibeli. Diskaun harga akan ditentukan berdasarkan jadual di bawah. Jumlah harga buku dapat dikira dengan mendarabkan kuantiti dan harga setelah diskaun. Tulis program yang meminta pengguna memasukkan kuantiti buku yang dibeli dan harganya. Kemudian cari jumlah potongan dan jumlah harga pembelian selepas diskaun. Paparkan semua hasilnya

Quantity of Book Purchased / *Kuantiti Buku dibeli*	Discount/ *Diskaun*
50 - 99	4%
100 – 299	8%
300 – 499	15%
>= 500	20%

Table 2 / *Jadual 2*

OUTPUT SAMPLE/ *CONTOH OUTPUT*

```
Welcome to GeniusBook Sdn. Bhd.
Please insert the book price: RM 62
Please insert the quantity of book to be purchase: 100
The total price of the book is RM 6200
You will get 8 percent discount: RM 496
Your total price after discount is RM 5704
Do you want to make new order (Y/N): Y


Please insert the book price: RM 30
Please insert the quantity of book to be purchase: 350
The total price of the book is RM 10500
You will get 15 percent discount: RM 1575
Your total price after discount is RM 8925
Do you want to make new order (Y/N): N
THANK YOU! Come again.
```
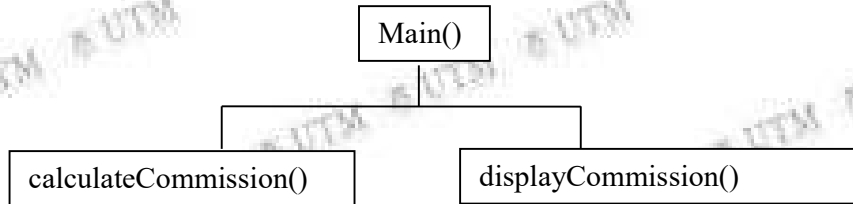
PROGRAM 2 / ATURCARA 2 [10M]

Write a complete program to calculate and display a commission based on sales value. Your program must involve the following functions: (refer the diagram below).

Tulis program lengkap untuk mengira dan memaparkan nilai komisyen. Aturcara anda mesti melibatkan fungsi-fungsi berikut:(rujuk rajah di bawah).

```
              ┌──────────┐
              │  Main()  │
              └──────────┘
             ┌──────┴────────┐
  ┌─────────────────────┐  ┌─────────────────────┐
  │ calculateCommission()│  │  displayCommission() │
  └─────────────────────┘  └─────────────────────┘
```

Function **main()** will ask user to read sales value. The value will be sent to calculateCommission **()** where inside this function the commission will be calculated and returned to **main()** function. Main() function will pass the commission value to displayCommission () function to display the commission. Commission is calculated based on the following table:

*Fungsi **main** () akan meminta pengguna membaca nilai jualan. Nilai akan dihantar kepada fungsi calculateCommission () di mana dalam fungsi ini komisen akan dikira dan dikembalikan ke fungsi **main** ().*
*Fungsi **main()** akan menghantar nilai komisen ke fungsi displayCommission () untuk memaparkan komisen. Komisen dikira berdasarkan jadual berikut:*

Sales Jualan	Commission Rate(%) Kadar Komisyen
< 1000	5%
1000 – 4999	7%
5000 – 10000	10%
> 10000	12%

– END OF QUESTIONS/ *SOALAN TAMAT*–