UNIVERSITI TUN HUSSEIN ONN MALAYSIA

PEPERIKSAAN AKHIR
SEMESTER II
SESI 2008/2009

NAMA MATA PELAJARAN	:	PENGATURCARAAN KOMPUTER
KOD MATA PELAJARAN	:	BFC 2042
KURSUS	:	2BFA, 2BFB, 2BFP
TARIKH PEPERIKSAAN	:	APRIL/MEI 2009
JANGKA MASA	:	2 JAM 30 MINIT
ARAHAN	:	JAWAB **SEMUA** SOALAN.

KERTAS SOALAN INI MENGANDUNGI LIMA BELAS (15) MUKA SURAT

SECTION A
Instruction: State whether the following statements are **TRUE** or **FALSE**.

Q1 The following code should print the values 1 to 10.

```
n=1;
   while (n < 10)
        printf("%d", n++);
```

Q2 A statement `char selection = 'yes'` is both a declaration and a definition.

Q3 C considers the variables `toDay` and `toDaY` to be identical.

Q4 The `default` case is required in the `switch` selection statement.

Q5 A variable that is known only within the function in which it is defined is called local variable.

Q6 The arithmetic operator `*`, `/`, `%`, `+` and `-` all have same level of precedence.

Q7 Function prototype informs the compiler that the program has function definition.

Q8 The `break` statement is required in the `default` case of a `switch` selection statement.

Q9 Function `printf` always begins printing at the beginning of a new line.

Q10 An expression containing the . operator is true if either or both of its operand is true.

(10 marks)

SECTION B
Instruction: Answer **ALL** questions.

Q11 Fix the errors for each of the statement below:

(a)
```
x = 1;
while (x <= 1);
      x+-;
}
```
(1 mark)

(b)
```
switch (num){
      case 1       :
            printf("\nThe number is 1");
      case 2       :
            printf("\nThe number is 2");
            brake
      default      ;
            printf("\nThe number is not 1 or 2");
            }
```
(3 marks)

(c)
```
int sum(int x, int y)
{
      int result;
      result = x + y;
}
```
(2 marks)

(d)
```
scanf ("%.2f", value);
printf ("%f," &value);
```
(2 marks)

(e)
```
if ( d < 1);
      printf("D is less than 1\n");
```
(1 mark)

(f)
```
if (d => 1)
      printf("D is equal to or greater than 1\n");
```
(1 mark)

Q12 State the output for the following segment code:

(a)
```
int a = 10, b = 12;

a += (b -= 2);
printf ("%d %d",a,b);
```
(2 marks)

(b)
```
int counter = 4, a = 5, b = -7, c;

c = a * ++counter - b;
printf("%d %d", counter, c);
```
(2 marks)

(c)
```
int p = 5;
int q = 10;
int r = 10;
while (p > 0)
 {
      printf("\n%d %d",++q, r--);
      --p;
 }
```
(5 marks)

(d) Given `int i = 4, j = 10, k; float p = 0.005, q = 0.01, r;`

Use the values originally assigned to the variables for each expression.

(i) `i *= 2`
(ii) `p *= 2`
(iii) `i %= j`
(iv) `i += (j-2)`
(v) `k = p + q`
(vi) `k = p = r`

(12 marks)

Q13 Write a C statement to accomplish each of the following:

(a) Assign the sum of `x` and `y` to `z` and increment the value of `x` by 1 after calculation.

(2 marks)

(b) Print the value `111.2222` with 2 digits of precision.

(2 marks)

(c) Define the variable `total` and `y` to be of type `int`.

(2 marks)

(d) Test if the value of the variable `count` is greater than `5`. If it is, print `"Count is greater than 5."`

(3 marks)

(e) Print `"The product is"` followed by the value of the integer variable `result`.

(3 marks)

Q14 State the output of the following programs segment:

(a)
```
printf ("*\n**\n***\n****\n*****\n******\n");
```

(3 marks)

(b)
```
int x = 3, y = 5, z = 2;
x *= y + z;
y /= 2 * z + 1;
z += x;
printf ("x = %d, y =%d, z = %d", x,y,z);
```

(3 marks)

(c)
```
void change(int);
int change1(int);

void main()
{
     int a=5;
     int b;
     printf("Before calling change  : a=%d\n",a);
     change(a);
     printf("After calling change  : a=%d\n",a);
     b= change1(a);
     printf("After change1 : a=%d b=%d\n",a,b);
     getch();
}
void change(int a)
{
      a= 2*a;
}
int change1(int b)
{
      int a;
      a= 4;
      b= a + b;
      return(b);
}
```

(4 marks)

(d)
```
int i, j=10;
for (i=1;  i<=4; ++i)
{
      printf("%d %d\n",i,j);
      j-=2;
}
```

(4 marks)

Q15 Convert the following `for` statements into equivalent `while` statements.

```
for ( count=0; count < 5; count++) {
      if (count & 2)
            printf("%d is odd",count);
}
printf("Count = %d ",count);
```

(5 marks)

Q16 Draw the flowchart for each of the following situation:

(a)
```
if (y < 15.0)
      if (y >= 0.0)
            x = 5 * y;
      else
            x = 2 * y;
else
      x = 3 * y;
```

(4 marks)

(b) Print weekly paychecks for a list of employees. The following data are to be entered interactively for each employee: ID, hours worked, and hourly pay rate. An ID of zero indicates the end of the data.

(4 marks)

SECTION C
Instruction: Answer **ALL** questions.

Q17 Write a program that display the following menu in **Figure Q17**:

```
**********************************************
              GEOMETRY CALCULATOR
**********************************************
1. Calculate the area of a Circle
2. Calculate the area of a Rectangle
3. Calculate the area of a Triangle
4. Quit

Enter your choice (1-4): 1

Enter the circle's radius: 7

The area is 153.94
```

Figure Q17

If the user enters `1`, the program should ask for the radius of the circle and then display its area. Use value `3.14159` for π. If the user enters `2`, the program should ask for the length and width of the rectangle, and then display the rectangle's area. If the user enters `3`, the program should ask for the length of the triangle's base and its height, and then display its area. If the user enters `4`, the program should end. Display an error message if the user enters a number outside the range of 1 trough 4 when selecting an item from the menu. The program should only accept positive number otherwise display error message.

(20 marks)

BAHAGIAN A
Arahan: Nyatakan sama ada penyataan berikut **BENAR** atau **PALSU**.

S1 Kod segmen berikut akan mencetak nilai 1 hingga 10.

```
n=1;
   while (n < 10)
        printf("%d", n++);
```

S2 Penyataan `char selection = 'yes'` melibatkan pentakrifan jenis data dan penyataan nilai.

S3 C menganggap pembolehubah `toDay` dan `ToDaY` adalah sama.

S4 Penyataan `default` adalah perlu di dalam penyataan pilihan `switch`.

S5 Pembolehubah yang hanya dikenali di dalam fungsi di mana ia ditakrifkan dikenali sebagai pembolehubah setempat.

S6 Operator aritmetik `*`, `/`, `%`, `+` dan `-` mempunyai sama tahap keutamaan.

S7 Prototaip fungsi memberitahu pengkompil bahawa aturcara tersebut mempunyai takrifan fungsi.

S8 Penyataan `break` adalah perlu dalam `default` bagi penyataan pilihan `switch`.

S9 Fungsi `printf` selalu memulakan cetakan pada permulaan baris baru.

S10 Ungkapan yang mengandungi operator . adalah benar jika salah satu atau kedua-dua operannya adalah benar.

(10 markah)

BAHAGIAN B
Arahan : Jawab **SEMUA** soalan.

S11 Kenalpasti dan perbetulkan kesalahan bagi setiap keratan program di bawah:

(a)
```
x = 1;
while (x <= 1);
      x++;
}
```
(1 markah)

(b)
```
switch (num) {
      case 1      :
            printf("\nThe number is 1");
      case 2      :
            printf("\nThe number is 2");
            brake
      default     ;
            printf("\nThe number is not 1 or 2");
            }
```
(3 markah)

(c)
```
int sum(int x, int y)
{
      int result;
      result = x + y;
}
```
(2 markah)

(d)
```
scanf ("%.2f", value);
printf ("%f," &value);
```
(2 markah)

(e)
```
if ( d < 1);
      printf("D is less than 1\n");
```
(1 markah)

(f)
```
if (d => 1)
      printf("D is equal to or greater than 1\n");
```
(1 markah)

S12 Nyatakan output untuk setiap penyataan di bawah:

(a)
```
int a = 10, b = 12;

a += (b -= 2);
printf ("%d %d",a,b);
```
(2 markah)

(b)
```
int counter = 4, a = 5, b = 7, c;

c = a * ++counter - b;
printf("%d %d", counter, c);
```
(2 markah)

(c)
```
int p = 5;
int q = 10;
int r = 10;
while (p > 0)
 {
      printf("\n%d %d",++q, r--);
      --p;
 }
```
(5 markah)

(d) Diberi `int i = 4, j = 10, k; float p = 0.005, q = 0.01, r;`

Gunakan nilai asal pembolehubah untuk setiap ungkapan.

(i) `i = - 2`
(ii) `p * = 2`
(iii) `i % = j`
(iv) `i + = (j-2)`
(v) `k = p + q`
(vi) `k = p = r`

(12 markah)

S13 Tulis pernyataan C yang boleh melaksanakan arahan berikut:

(a) Berikan hasil tambah `x` dan `y` kepada `z` dan tambahkan nilai `x` sebanyak `1` selepas pengiraan.
(2 markah)

(b) Cetak nilai `111.2222` dengan 2 titik perpuluhan.
(2 markah)

(c) Isytiharkan pembolehubah `total` dan `y` dari jenis `int`.
(2 markah)

(d) Uji sama ada nilai pembolehubah `count` adalah lebih besar dari `5`. Jika ya, cetak `"Count is greater than 5."`

(3 markah)

(e) Cetak `"The product is"` diikuti dengan nilai integer bagi pembolehubah `result`.

(3 markah)

S14 Nyatakan output bagi setiap keratan program berikut:

(a)
```
printf ("*\n**\n***\n****\n*****\n******\n");
```

(3 markah)

(b)
```
int x = 3, y = 5, z = 2;
x *= y + z;
y /= 2 * z + 1;
z -= x;
printf ("x = %d, y =%d, z = %d", x,y,z);
```

(3 markah)

(c)
```
void change(int);
int changel(int);

void main()
{
     int a=5;
     int b;
     printf("Before calling change  : a=%d\n",a);
     change(a);
     printf("After calling change  : a=%d\n",a);
     b= changel(a);
     printf("After changel : a=%d b=%d\n",a,b);
     getch();
}
void change(int a)
{
      a= 2*a;
}
int changel(int b)
{
      int a;
      a= 4;
      b= a + b;
      return(b);
}
```

(4 markah)

(d)
```
int i, j=10;
for (i=1;  i<=4; ++i)
{
      printf("%d %d\n",i,j);
      j-=2;
}
```

(4 markah)

S15 Tukarkan penyataan `for` berikut kepada penyataan `while` yang berpadanan.

```
for ( count=0; count < 5; count++) {
      if (count % 2)
            printf("%d is odd",count);
}
printf("Count = %d ",count);
```

(5 markah)

S16 Lakarkan carta alir bagi setiap situasi berikut:

(a)
```
if (y < 15.0)
      if (y >= 0.0)
            x = 5 * y;
      else
            x = 2 * y;
else
      x = 3 * y;
```

(4 markah)

(b) Cetak cek gaji mingguan untuk satu senarai pekerja-pekerja. Data berikut boleh dimasukkan secara interaktif untuk setiap seorang pekerja: ID, jam bekerja, dan kadar gaji menurut jam. ID sifar menunjukkan berakhirnya data.

(4 markah)

BAHAGIAN C
Arahan: Jawab **SEMUA** soalan.

S17 Tuliskan satu aturcara yang dapat memaparkan menu seperti dalam **Rajah S17** berikut:

```
**********************************************
              GEOMETRY CALCULATOR
**********************************************
1. Calculate the area of a Circle
2. Calculate the area of a Rectangle
3. Calculate the area of a Triangle
4. Quit

Enter your choice (1-4): 1

Enter the circle's radius: 7

The area is 153.94
```

Rajah S17

Jika pengguna itu memasuki `1`, aturcara sepatutnya bertanya nilai jejari bagi bulatan dan kemudian mempamerkan kawasannya. Nilai `π` yang digunakan ialah `3.14159`. Jika pengguna itu memasuki `2`, aturcara sepatutnya bertanya untuk kepanjangan dan kelebaran bagi segiempat tepat, dan kemudian memaparkan kawasan segiempat tepat. Jika pengguna itu memasuki `3`, aturcara sepatutnya bertanya untuk kepanjangan tapak segi tiga itu dan ketinggiannya, dan kemudian memaparkan kawasannya. Jika pengguna itu memasuki `4`, aturcara harus ditamatkan. Paparkan satu mesej ralat jika pengguna itu memasuki satu jumlah di luar julat 1 hingga 4 semasa pemilihan daripada menu. Aturcara hanya menerima nombor positif, jika tidak mesej ralat akan dipaparkan.

(20 markah)