UNIVERSITI SAINS MALAYSIA

Second Semester Examination
2010/2011 Academic Session

April/May 2011

CPT211/CPM313 – Programming Language Concepts & Paradigms
[Konsep & Paradigma Bahasa Pengaturcaraan]

Duration : 2 hours
[Masa : 2 jam]

INSTRUCTIONS TO CANDIDATE:
[ARAHAN KEPADA CALON:]

- Please ensure that this examination paper contains **FOUR** questions in **NINE** printed pages before you begin the examination.

  *[Sila pastikan bahawa kertas peperiksaan ini mengandungi **EMPAT** soalan di dalam **SEMBILAN** muka surat yang bercetak sebelum anda memulakan peperiksaan ini.]*

- Answer **ALL** questions.

  *[Jawab **SEMUA** soalan.]*

- You may answer the questions either in English or in Bahasa Malaysia.

  [Anda dibenarkan menjawab soalan sama ada dalam bahasa Inggeris atau bahasa Malaysia.]

- In the event of any discrepancies, the English version shall be used.

  [Sekiranya terdapat sebarang percanggahan pada soalan peperiksaan, versi bahasa Inggeris hendaklah diguna pakai.]

1. (a) List and explain the **five (5)** programming domains.

(6/100)

(b) In addition to the five (5) above, are there any new domains that you can think of?

(4/100)

(c) Von Neumann model had a major influence on the modern programming languages. Explain how did the model influence the design.

(5/100)

(d) What is the oldest programming language and who invented this?

(5/100)

(e) Prolog is not your typical programming language. Briefly explain what this language is meant for.

(5/100)

2. (a) What does BASIC stand for?

(1/100)

(b) What is the difference between interpreted and compiled language? Give **two (2)** examples for each type.

(5/100)

(c) Is Java an interpreted or compiled language? Please give your opinion.

(3/100)

(d) What is a variable? Variable can be described using a 6-tuple of attributes. What are they?

(5/100)

(e) What is explicit and implicit declaration? Give examples to illustrate your answer.

(6/100)

(f) Following statements illustrate an operator's ability to change its role

```
1 + 1 = 1;
1.0 + 1.0 = 2.0;
"1" + "1" = "11';
```

What is the ability called? Explain in detail.

(4/100)

(g) Give **three (3)** operator examples for boolean expressions.

(1/100)

3. (a) Differentiate between programming paradigms, languages and concepts. Give examples.

(9/100)

(b) Given below is an XHTML script. What is the output?

```
1
2
3
4
5
6 <html>
7 <head>
8 <title>Solution</title>
9 </head>
10 <body>
11 <h3>My Favorite Ice Cream, Soft Serve and Frozen Yogurt
12 Flavors</h3>
13 <!-- start of ordered list -->
14 <ol>
15 <li>Ice Cream
16 <ul> <!-- start of nested unordered list -->
17 <li>Cherry Garcia</li>
18 <li>Cookie Dough</li>
19 <li>Bubble Gum</li>
20 <li>Coffee</li>
21 </ul> <!-- end of ul from line 16 -->
22 </li>
23 <li>Soft Serve
24 <ul> <!-- another nested unordered list -->
25 <li>Vanilla</li>
26 <li>Chocolate</li>
27 <li>Strawberry</li>
28 </ul> <!-- end of ul from line 24 -->
29 </li>
30 <li>Frozen Yogurt
31 <ul> <!-- another nested unordered list -->
32 <li>Vanilla</li>
33 <li>Heathbar Crunch</li>
34 <li>Chocolate</li>
35 </ul> <!-- end of ul from line 31 -->
36 </li>
37 </ol>
38 </body>
39 </html>
```

(8/100)

(c) Find the error in each of the following code segments, and explain how to correct it:

(i)
```
x = 1;
while ( x <= 10 );
++x;
}
```

(ii)
```
for ( y = .1; y != 1.0; y += .1 )
document.write( y + " " );
```

(iii)
```
switch ( n )
{
case 1:
document.writeln( "The number is 1" );
case 2:
document.writeln( "The number is 2" );
break;
default:
document.writeln( "The number is not 1 or 2" );
break;
}
```

(iv) The following code should print the values from 1 to 10:

```
n = 1;
while ( n < 10 )
document.writeln( n++ );
```

(8/100)

4. (a) State which of the following statements are TRUE and which are FALSE. If FALSE, explain why.

(i) An ordered list cannot be nested inside an unordered list.

(ii) XHTML is an acronym for XML HTML.

(iii) Element br represents a line break.

(iv) Hyperlinks are denoted by link elements.

(v) The width of all data cells in a table must be the same.

(vi) You are limited to a maximum of 100 internal links per page.

(vii) RSS is a technology for creating markup languages.

(viii) XML markup is delimited by forward and backward slashes (/ and \).

(ix) Not necessary all XML start tags have corresponding end tags.

(x) Parsers check an XML document's syntax.

(xi) When creating XML elements, document authors must use the set of XML tags provided by the W3C.

(xii) DTDs are written using an XML vocabulary.

(16/100)

(b) Explain the following terms:

(i) Ajax

(ii) Concurrent Programming

(iii) Code-behind file in ASP.NET 2

(9/100)

1. (a) Senarai dan terangkan **lima (5)** domain pengaturcaraan.

(6/100)

(b) Selain daripada lima (5) di atas, pada pandangan anda, adakah terdapat domain-domain pengaturcaraan yang baru?

(4/100)

(c) Model von Neumann mempunyai pengaruh yang kuat terhadap bahasa pengaturcaraan moden. Terangkan bagaimana model ini mempengaruhi reka bentuk tersebut.

(5/100)

(d) Apakah bahasa pengaturcaraan tertua dan siapakah yang menciptanya?

(5/100)

(e) Prolog bukan suatu bahasa pengaturcaraan yang biasa anda kenali. Secara ringkas, terangkan tujuan bahasa ini diwujudkan.

(5/100)

2. (a) Apakah maksud BASIC?

(1/100)

(b) Apakah perbezaan di antara bahasa pengaturcaraan ditafsir dan dikompilasi? Berikan **dua (2)** contoh bagi setiap jenis.

(5/100)

(c) Adakah Java ditafsir atau dikompilasi? Apakah pandangan anda?

(3/100)

(d) Apakah itu pemboleh ubah? Pemboleh ubah boleh diterangkan dengan menggunakan atribut dalam 6-tupel. Apakah atribut-atribut ini?

(5/100)

(e) Apakah yang dimaksudkan dengan deklarasi tak tersirat dan tersirat? Berikan contoh untuk menggambarkan jawapan anda.

(6/100)

(f) Kenyataan berikut menggambarkan kebolehupayaan operator untuk mengubah peranannya:

```
1 + 1 = 1;
1.0 + 1.0 = 2.0;
"1" + "1" = "11';
```

Apakah kebolehupayaan ini dipanggil? Terangkan secara terperinci.

(4/100)

(g) Berikan **tiga (3)** contoh operator yang digunakan dalam penyataan *boolean.*

(1/100)

3. (a) Berikan perbezaan antara paradigma, bahasa dan konsep bagi pengaturcaraan. Berikan contoh.

(9/100)

(b) Diberi di bawah suatu skrip XHTML. Apakah outputnya?

```
1
2
3
4
5
6 <html>
7 <head>
8 <title>Solution</title>
9 </head>
10 <body>
11 <h3>My Favorite Ice Cream, Soft Serve and Frozen Yogurt
12 Flavors</h3>
13 <!-- start of ordered list -->
14 <ol>
15 <li>Ice Cream
16 <ul> <!-- start of nested unordered list -->
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18 <li>Cookie Dough</li>
19 <li>Bubble Gum</li>
20 <li>Coffee</li>
21 </ul> <!-- end of ul from line 16 -->
22 </li>
23 <li>Soft Serve
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26 <li>Chocolate</li>
27 <li>Strawberry</li>
28 </ul> <!-- end of ul from line 24 -->
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30 <li>Frozen Yogurt
31 <ul> <!-- another nested unordered list -->
32 <li>Vanilla</li>
33 <li>Heathbar Crunch</li>
34 <li>Chocolate</li>
35 </ul> <!-- end of ul from line 31 -->
36 </li>
37 </ol>
38 </body>
39 </html>
```

(8/100)

(c) Cari ralat dalam setiap keratan kod yang berikut, dan jelaskan bagaimana untuk membetulkannya:

(i)
```
x = 1;
while ( x <= 10 );
++x;
}
```

(ii)
```
for ( y = .1; y != 1.0; y += .1 )
document.write( y + " " );
```

(iii)
```
switch ( n )
{
case 1:
document.writeln( "The number is 1" );
case 2:
document.writeln( "The number is 2" );
break;
default:
document.writeln( "The number is not 1 or 2" );
break;
}
```

(iv) Kod berikut harus mencetak nilai dari 1 hingga 10:

```
n = 1;
while ( n < 10 )
document.writeln( n++ );
```

(8/100)

4. (a) Nyatakan kenyataan manakah yang berikut adalah BENAR dan yang manakah PALSU. Jika PALSU, jelaskan mengapa.

(i) Suatu senarai tersusun tidak boleh disarangkan ke dalam suatu senarai tak tersusun.

(ii) XHTML ialah akronim bagi XML HTML.

(iii) Elemen br ialah pemutus garis.

(iv) Hiperpautan dilambangkan oleh elemen-elemen pautan.

(v) Kelebaran bagi semua sel data dalam sebuah jadual mestilah sama.

(vi) Anda dihadkan sehingga maksimum 100 pautan dalaman bagi setiap halaman.

(vii) RSS ialah teknologi untuk mencipta bahasa-bahasa tokokan.

(viii) Tokokan XML dibatasi oleh garis condong ke hadapan dan garis condong ke belakang (/ dan \).

(ix) Tidak semestinya semua tag mula XML mempunyai tag akhir yang sama.

(x) Penghurai menyemak sintaks bagi dokumen XML.

(xi) Apabila mencipta elemen XML, penulis dokumen mestilah menggunakan set tag XML yang disediakan oleh W3C.

(xii) DTD ditulis menggunakan perbendaharaan kata XML.

(16/100)

(b) Jelaskan istilah-istilah yang berikut:

(i) Ajax

(ii) Pemprograman Serentak

(iii) Fail belakang-kod dalam ASP.NET 2

(9/100)

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