Unité d'Enseignement en Informatique
Année 2015-2016

Master M1 EFREI – ASI – BI
Devoir Écrit de ERP – Second Session June 7, 2016
(1h00 duration, no document allowed, no computation and/or communication tool)

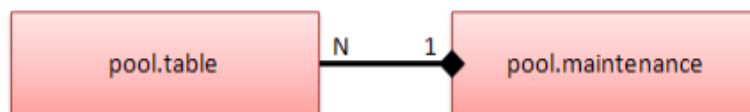*Rule: All answers must be written in English.*

Exercise 1: (4 points)

1) First ERP software systems were developed since the early 1990's. However, the information system of many companies migrated for ERP only around the period 1999-2001. What are the two main events which caused this evolution towards ERP?

2) What language is used to develop the modules of SAP ERP?

3) SAP NetWeaver can only be used for applications developed by SAP.
   - a. True
   - b. False

4) Which of the following are subcomponents of NetWearver? (3 correct answers)
   - a. People Integration
   - b. Application platform
   - c. Database
   - d. Information Integration
   - e. Java Development Kit

Exercise 2: (6 points)

A pool center owns pool tables, located on different floors. The pool center offers four kinds of tables: Snooker (3.6×1.8 m), American (2.5×1.3 m), French (3.1×1.7 m) and English (2.1×1.0 m). These tables are rent to players and players pay for the time spent on the tables. In order to manage the pool center, we started to develop a new OpenERP module. The purpose of this module is to manage the occupation of the tables and the maintenance tickets of the tables. The data model of this new module is detailed below. Each maintenance ticket is about one table, and each table can be maintained several times.

The writing of source code of `pool.table` and `pool.maintenance` has already begun. See the four files `pool.py`, `pool_data.xml`, `pool_view.xml` and `pool_workflow.xml` below.

1) One line of the file `pool.py` has been erased. Which line is missing? Write the code of this line.

2) We defined a column called `state` for the two business objects `pool.maintenance` and `pool.table`. Why are these columns important? What are these columns used for?

3) Now we want to add a new field in order to manually input the code number of the technician whom the maintenance is assigned. Write all the modifications of code to implement this. You give also the name of the files and the number of the lines where you do these modifications.

4) How many workflows are described in this module? How many states are described? Draw the state diagrams to represent the workflows of this module.

pool.py

```python
1   from openerp.osv import osv
2   from openerp.osv import fields
3   from openerp.tools.translate import _
4   import time
5
6   listKND = [('sn', 'Snooker'), ('am', 'American'), \
7              ('fr', 'French'), ('en', 'English')]
8
9   class pool_table(osv.osv):
10      """ A pool table """
11      _name = "pool.table"
12      _description = "Pool table"
13      _columns = {
14          'name': fields.char('Table number', size=64, required=True),
15          'kind': fields.selection(listKND, 'Kind of table', required=True),
16          'floor': fields.integer('Location of the table'),
17          'state': fields.selection(
18              [
19                  ('ready', 'Ready'),
20                  ('inuse', 'In use'),
21                  ('maint', 'In maintenance'),
22                  ('close', 'Closed'),
23                  ],
24              'Status', readonly=True, track_visibility='onchange',
25              )
26      }
27      _sql_constraints = [
28          ('name', 'unique(name)', 'The name of a pool table must be unique')
29      ]
30      _order = 'name asc'
31
32      def table_ready (self, cr, uid, ids, context={}):
33          return self.write(cr, uid, ids, {'state': 'ready'}, context=context)
34
35      def table_inuse (self, cr, uid, ids, context={}):
36          return self.write(cr, uid, ids, {'state': 'inuse'}, context=context)
37
38      def table_maint (self, cr, uid, ids, context={}):
39          return self.write(cr, uid, ids, {'state': 'maint'}, context=context)
40
41      def table_close (self, cr, uid, ids, context={}):
42          return self.write(cr, uid, ids, {'state': 'close'}, context=context)
43
44   class pool_maintenance(osv.osv):
45      """ The maintenance of pool table """
46      _name = "pool.maintenance"
47      _description = "The maintenance of pool table"
48      _columns = {
49          'name': fields.char('Title', size=64, required=True),
50          'description': fields.text('Description'),
51
52          'state': fields.selection([('new', 'New'),('don', 'Done')],
53              'Status', readonly=True, track_visibility='onchange',
54              )
55      }
56      _sql_constraints = [
57          ('name', 'unique(name)', 'The name of a maintenance action must be unique')
58      ]
59      _order = 'name asc'
60
61      def maintenance_new (self, cr, uid, ids, context={}):
62          return self.write(cr, uid, ids, {'state': 'new'}, context=context)
63
64      def maintenance_don (self, cr, uid, ids, context={}):
65          return self.write(cr, uid, ids, {'state': 'don'}, context=context)
66
```

pool_data.xml

```xml
1   <?xml version="1.0"?>
2   <openerp>
3       <data>
4           <!-- Table -->
5           <record model="pool.table" id="pool_table_0">
6               <field name="name">001</field>
7               <field name="kind">am</field>
```

```
 8              <field name="floor">0</field>
 9          </record>
10          <record model="pool.table" id="pool_table_1">
11              <field name="name">003</field>
12              <field name="kind">fr</field>
13              <field name="floor">0</field>
14          </record>
15          <record model="pool.table" id="pool_table_2">
16              <field name="name">004</field>
17              <field name="kind">en</field>
18              <field name="floor">0</field>
19          </record>
20          <record model="pool.table" id="pool_table_3">
21              <field name="name">101</field>
22              <field name="kind">en</field>
23              <field name="floor">1</field>
24          </record>
25          <record model="pool.table" id="pool_table_4">
26              <field name="name">103</field>
27              <field name="kind">en</field>
28              <field name="floor">1</field>
29          </record>
30          <record model="pool.table" id="pool_table_5">
31              <field name="name">104</field>
32              <field name="kind">en</field>
33              <field name="floor">1</field>
34          </record>
35          <record model="pool.table" id="pool_table_6">
36              <field name="name">105</field>
37              <field name="kind">am</field>
38              <field name="floor">1</field>
39          </record>
40          <record model="pool.table" id="pool_table_7">
41              <field name="name">301</field>
42              <field name="kind">sn</field>
43              <field name="floor">3</field>
44          </record>
45      </data>
46  </openerp>
```

pool_view.xml

```
 1  <?xml version="1.0"?>
 2  <openerp>
 3    <data>
 4
 5    <!-- Pool Table: Form View -->
 6    <record model="ir.ui.view" id="view_pool_table_form">
 7      <field name="name">pool.table.form</field>
 8      <field name="model">pool.table</field>
 9      <field name="arch" type="xml">
10      <form string="Table of Pool" version="7.0">
11      <header>
12        <button name="signal_table_inuse" string="In use" states="ready" class="oe_highlight" />
13        <button name="signal_table_ready" string="Ready" states="inuse" class="oe_highlight" />
14        <button name="signal_table_maint" string="Maintain" states="ready" class="oe_highlight" />
15        <button name="signal_table_ready" string="Ready" states="maint" class="oe_highlight" />
16        <button name="signal_table_close" string="Close" states="ready" class="oe_highlight" />
17        <field name="state" widget="statusbar" statusbar_visible="ready,inuse,close" />
18      </header>
19      <sheet>
20        <label for="name"/><field name="name"/>
21        <label for="kind"/><field name="kind"/>
22        <label for="floor"/><field name="floor"/>
23      </sheet>
24      </form>
25      </field>
26    </record>
27
28    <!-- Pool Table: Tree View -->
29    <record model="ir.ui.view" id="view_pool_table_tree">
30      <field name="name">pool.table.tree</field>
31      <field name="model">pool.table</field>
32      <field name="field_parent"></field>
33      <field name="arch" type="xml">
34        <tree string="Table of Open Data">
35        <field name="name"/>
36        <field name="kind"/>
```

```
37        <field name="floor"/>
38        <field name="state"/>
39      </tree>
40    </field>
41  </record>
42
43  <!-- Pool Table: Search View  -->
44  <record model="ir.ui.view" id="view_pool_table_search">
45    <field name="name">pool.table.search</field>
46    <field name="model">pool.table</field>
47    <field name="arch" type="xml">
48      <search string="Models of Open Data">
49        <filter string="Snooker" domain="[('kind','=', 'sn')]" help="Snooker tables"/>
50        <filter string="American" domain="[('kind','=', 'am')]" help="American tables"/>
51        <filter string="French" domain="[('kind','=', 'fr')]" help="French tables"/>
52        <filter string="English" domain="[('kind','=', 'en')]" help="English tables"/>
53        <filter string="Free tables" domain="[('state','=', 'ready')]" help="Free tables"/>
54        <filter string="Not free tables" domain="[('state','!=', 'ready')]" help="Not free
   tables"/>
55        <group expand="0" string="Group By...">
56          <filter string="floor" help="Floor location" context="{'group_by':'floor'}"/>
57          <filter string="kind" help="Kind of table" context="{'group_by':'kind'}"/>
58        </group>
59      </search>
60    </field>
61  </record>
62
63  <!-- Pool Table: Action -->
64  <record model="ir.actions.act_window" id="action_pool_table">
65    <field name="name">Tables</field>
66    <field name="res_model">pool.table</field>
67    <field name="view_type">form</field>
68    <field name="view_mode">tree,form</field>
69    <field name="search_view_id" ref="view_pool_table_search"/>
70  </record>
71
72  <!-- Pool Maintenance: Form View -->
73  <record model="ir.ui.view" id="view_pool_maintenance_form">
74    <field name="name">pool.maintenance.form</field>
75    <field name="model">pool.maintenance</field>
76    <field name="arch" type="xml">
77      <form string="Pool maintenance" version="7.0">
78      <header>
79        <button name="signal_maintenance_don" string="Done" states="new" class="oe_highlight" />
80        <field name="state" widget="statusbar" statusbar_visible="new,don" />
81      </header>
82      <sheet>
83        <label for="name"/><field name="name"/>
84        <label for="description"/><field name="description"/>
85        <label for="table_id"/><field name="table_id"/>
86      </sheet>
87      </form>
88    </field>
89  </record>
90
91  <!-- Pool Maintenance: Tree View -->
92  <record model="ir.ui.view" id="view_pool_maintenance_tree">
93    <field name="name">pool.maintenance.tree</field>
94    <field name="model">pool.maintenance</field>
95    <field name="field_parent"></field>
96    <field name="arch" type="xml">
97      <tree string="Maintenance of Pool tables">
98        <field name="name"/>
99        <field name="description"/>
100       <field name="table_id"/>
101       <field name="state"/>
102     </tree>
103   </field>
104 </record>
105
106 <!-- Pool Maintenance: Search View  -->
107 <record model="ir.ui.view" id="view_pool_maintenance_search">
108   <field name="name">pool.maintenance.search</field>
109   <field name="model">pool.maintenance</field>
110   <field name="arch" type="xml">
111     <search string="Models of Open Maintenance">
112       <filter string="New ticket" domain="[('state','=','new')]" help="New maintenance
   ticket"/>
113       <filter string="Done maintenance" domain="[('state','=','don')]" help="Maintenance
   done"/>
```

```
114            <group expand="0" string="Group By...">
115              <filter string="Status" help="Status" context="{'group_by':'state'}"/>
116              <filter string="Table" help="Table" context="{'group_by':'table_id'}"/>
117            </group>
118          </search>
119        </field>
120      </record>
121
122      <!-- Pool Maintenance: Action -->
123      <record model="ir.actions.act_window" id="action_pool_maintenance">
124        <field name="name">Maintenance</field>
125        <field name="res_model">pool.maintenance</field>
126        <field name="view_type">form</field>
127        <field name="view_mode">tree,form</field>
128        <field name="search_view_id" ref="view_pool_maintenance_search"/>
129      </record>
130
131      <!-- Top menu item -->
132      <menuitem name="Pools" id="base.menu_pool_root" sequence="120" groups="base.group_user"/>
133
134      <!-- Menus sections -->
135      <menuitem name="Pools" id="menu_pool_pools" parent="base.menu_pool_root" sequence="2"/>
136
137      <!-- Menus items -->
138      <menuitem name="Tables" id="menu_pool_tables" parent="menu_pool_pools"
         action="action_pool_table" sequence="1"/>
139      <menuitem name="Maintenance" id="menu_pool_maintenance" parent="menu_pool_pools"
         action="action_pool_maintenance" sequence="1"/>
130
131    </data>
132  </openerp>
```

pool_workflow.xml

```
1  <?xml version="1.0"?>
2  <openerp>
3      <data>
4          <!-- WORKFLOW -->
5          <record model="workflow" id="wkf_table">
6              <field name="name">table.wkf</field>
7              <field name="osv">pool.table</field>
8              <field name="on_create">True</field>
9          </record>
10
11         <!-- STATES -->
12         <record model="workflow.activity" id="act_table_ready">
13             <field name="wkf_id" ref="wkf_table" />
14             <field name="name">ready</field>
15             <field name="kind">function</field>
16             <field name="action">table_ready()</field>
17             <field name="flow_start">True</field>
18         </record>
19         <record model="workflow.activity" id="act_table_inuse">
20             <field name="wkf_id" ref="wkf_table" />
21             <field name="name">inuse</field>
22             <field name="kind">function</field>
23             <field name="action">table_inuse()</field>
24         </record>
25         <record model="workflow.activity" id="act_table_maint">
26             <field name="wkf_id" ref="wkf_table" />
27             <field name="name">maint</field>
28             <field name="kind">function</field>
29             <field name="action">table_maint()</field>
30         </record>
31         <record model="workflow.activity" id="act_table_close">
32             <field name="wkf_id" ref="wkf_table" />
33             <field name="name">close</field>
34             <field name="kind">function</field>
35             <field name="action">table_close()</field>
36             <field name="flow_stop">True</field>
37         </record>
38
39         <!-- TRANSITIONS -->
40         <record model="workflow.transition" id="trans_table_ready_inuse">
41             <field name="act_from" ref="act_table_ready" />
42             <field name="act_to" ref="act_table_inuse" />
43             <field name="signal">signal_table_inuse</field>
44         </record>
45         <record model="workflow.transition" id="trans_table_inuse_ready">
```

```
46              <field name="act_from" ref="act_table_inuse" />
47              <field name="act_to" ref="act_table_ready" />
48              <field name="signal">signal_table_ready</field>
49          </record>
50          <record model="workflow.transition" id="trans_table_ready_maint">
51              <field name="act_from" ref="act_table_ready" />
52              <field name="act_to" ref="act_table_maint" />
53              <field name="signal">signal_table_maint</field>
54          </record>
55          <record model="workflow.transition" id="trans_table_maint_ready">
56              <field name="act_from" ref="act_table_maint" />
57              <field name="act_to" ref="act_table_ready" />
58              <field name="signal">signal_table_ready</field>
59          </record>
60          <record model="workflow.transition" id="trans_table_ready_close">
61              <field name="act_from" ref="act_table_ready" />
62              <field name="act_to" ref="act_table_close" />
63              <field name="signal">signal_table_close</field>
64          </record>
65
66          <!-- WORKFLOW -->
67          <record model="workflow" id="wkf_maintenance">
68              <field name="name">maintenance.wkf</field>
69              <field name="osv">pool.maintenance</field>
70              <field name="on_create">True</field>
71          </record>
72
73          <!-- STATES -->
74          <record model="workflow.activity" id="act_maintenance_new">
75              <field name="wkf_id" ref="wkf_maintenance" />
76              <field name="name">new</field>
77              <field name="kind">function</field>
78              <field name="action">maintenance_new()</field>
79              <field name="flow_start">True</field>
80          </record>
81          <record model="workflow.activity" id="act_maintenance_don">
82              <field name="wkf_id" ref="wkf_maintenance" />
83              <field name="name">don</field>
84              <field name="kind">function</field>
85              <field name="action">maintenance_don()</field>
86              <field name="flow_stop">True</field>
87          </record>
88
89          <!-- TRANSITIONS -->
90          <record model="workflow.transition" id="trans_maintenance_new_don">
91              <field name="act_from" ref="act_maintenance_new" />
92              <field name="act_to" ref="act_maintenance_don" />
93              <field name="signal">signal_maintenance_don</field>
94          </record>
95      </data>
96  </openerp>
```