



CampusIT

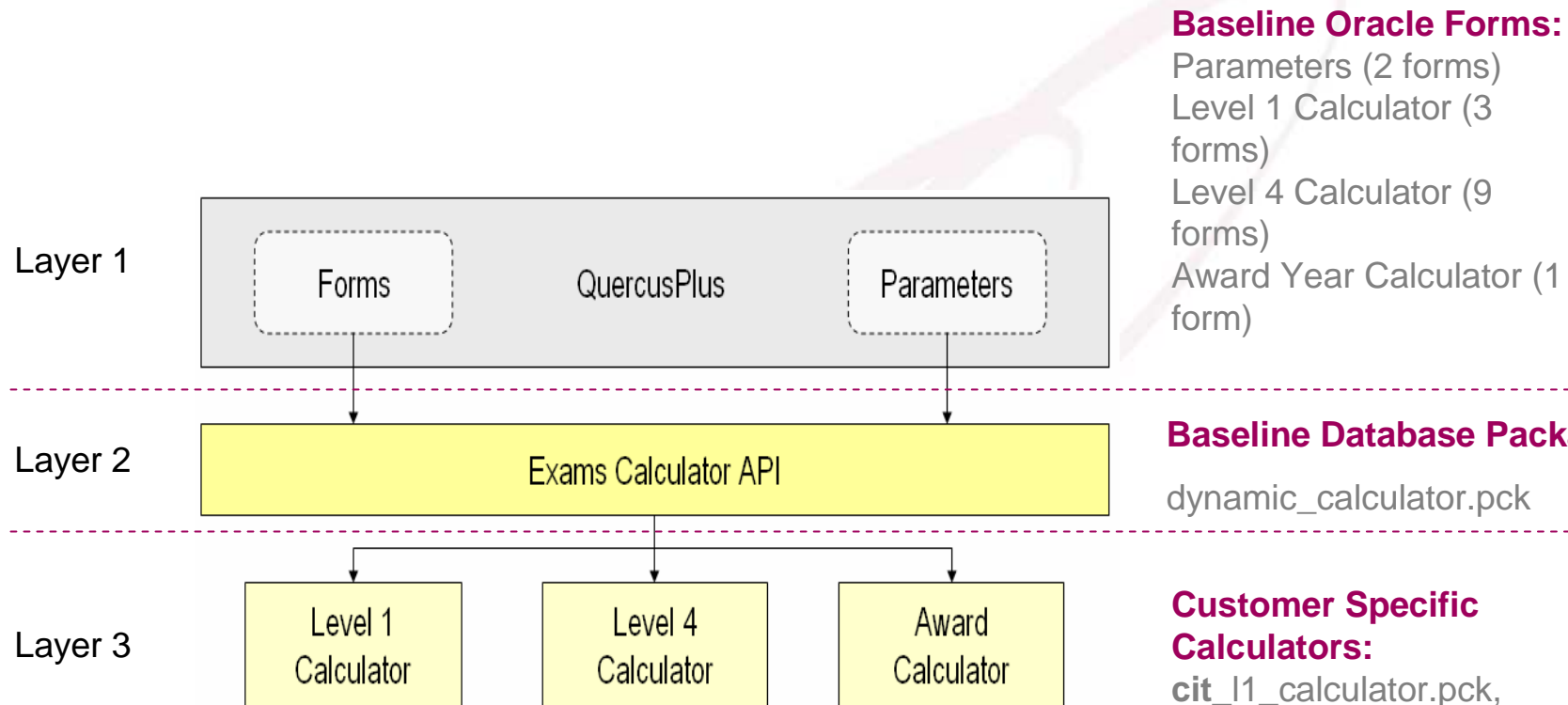
Presentation to HE User Group

Exams Calculator API

November 28th 2008

- **Benefits for institutions using standard Exams Calculators:**
 - Enhanced monitoring allowing quicker investigation and resolution
 - Standard product maintained under the standard SLA
- **Institutions using specialist (customized) Exams Calculators:**
 - Flexibility to develop client-specific exam calculators
 - Transparency between standard and specific functionality
 - Option to automate testing of calculators

Architecture



Baseline Oracle Forms:

Parameters (2 forms)
Level 1 Calculator (3 forms)
Level 4 Calculator (9 forms)
Award Year Calculator (1 form)

Baseline Database Package:

dynamic_calculator.pck

Customer Specific Calculators:

cit_l1_calculator.pck,
cit_l4_calculator.pck,
cit_award_calculator.pck,

nuig_l1_calculator.pck, ...
uop_l4_calculator.pck, ...
uog_award_calculator.pck ...

...

Layer 2 – dynamic_calculator.pck

- **Unified mechanism to invoke any calculator**
 - Any form
 - Any type: L1..L4, Award
- **Determine name of the calculator**
 - Clear rules
 - Parametrized
- **Monitoring**
 - Every call is logged
 - Details about execution

Layer 2 – dynamic_calculator.pck

QUERCUS@HE

Package dynamic_calculator

DYNAMIC_CALCULATOR Dynamically executes calculator's procedure.

Version

2008-11-06

Author

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Program units

run_l1_calculator procedure Run_L1_Calculator Dynamically executes level 1 calculator procedure.
run_l2_calculator procedure Run_L2_Calculator Dynamically executes level 2 calculator procedure.
run_l3_calculator procedure Run_L2_Calculator
run_l4_calculator procedure Run_L4_Calculator Dynamically executes level 4 calculator procedure.
run_award_calculator procedure Run_Award_Calculator Dynamically executes award calculator procedure.

run_l1_calculator

```
procedure run_l1_calculator(p_instance      number,  
                           p_credits       number,  
                           p_grade_scheme  number,  
                           p_course_year   number,  
                           p_sitting       number,  
                           p_max_mark     number,  
                           p_scd          number,  
                           p_module_level  number,  
                           p_level        number,  
                           p_deferral      number)
```

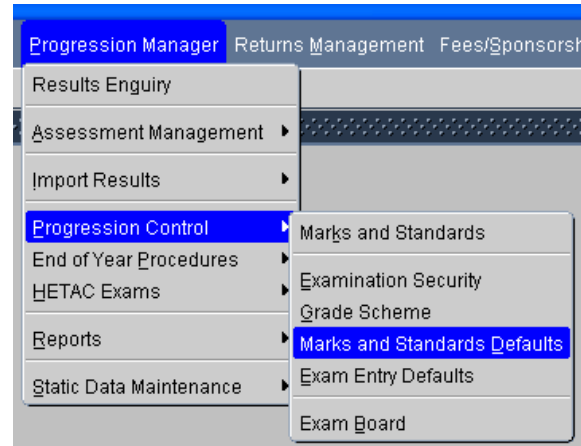
procedure Run_L1_Calculator Dynamically executes level 1 calculator procedure.

Parameters

p_instance Course Instance
p_credits Credits
p_grade_scheme Grade Scheme



Layer 2 - Configuration

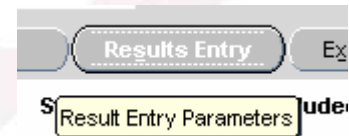
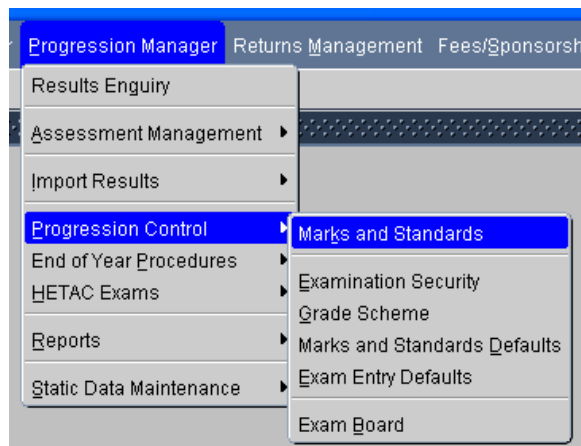


Award Year Calculator

Full Time Calculator

Part Time Calculator

Level 4 Calculator



Result Entry Level	Calculator
4 - Student Assessment D...	CIT_L4_CALCULATOR.CALCULATE
	Calculator used

Layer 2 – Priority to determine Calculator name

1. “Result Entry Parameters” (Course and Sitting level calculators)

Result Entry Level	Calculator
4 - Student Assessment D...	CIT_L4_CALCULATOR.CALCULATE
	Calculator used

2. “Marks & Standards Defaults” (System level calculators)

Award Year Calculator	CIT_AWARD_CALCULATOR.CALCULATE
Full Time Calculator	CIT_L1_CALCULATOR.CALCULATE
Part Time Calculator	CIT_L1_CALCULATOR.CALCULATE
Level 4 Calculator	CIT_L4_CALCULATOR.CALCULATE

3. Default CampusIT Calculators:

- *cit_l1_calculator.calculate*,
- *cit_l4_calculator.calculate*,
- *cit_award_calculator.calculate*

Layer 3 – Unified Interface

- **Recommended naming convention**
 - `xxx_l1_calculator.calculate(...)`
 - `xxx_l4_calculator.calculate(...)`
 - `xxx_award_calculator.calculate(...)`
 - `xxx` = cit, nuig, shi, uog, uop ...
- **Monitoring**
 - Detail log for standard calculators
 - Optional for custom calculators
- **Standardized set of parameters**
 - For each calculator type

Layer 3 – Unified Interface

All L1 Calculators

```
procedure calculate(p_instance      number, -- not used
                  p_required_credits number, -- not used
                  p_grade_scheme   number,
                  p_course_year    number, -- not used
                  p_sitting        number,
                  p_grade_profile   varchar2, -- not used
                  p_maximum_mark   number, -- not used
                  p_scd            number,
                  p_module_level   number, -- not used
                  p_level          number -- not used
                  )
```

Level 1 (Overall) Calculator Standard calculator for level 1

Parameters

p_scd	Student Course Detail (object_id)
p_required_credits	Credits
p_grade_scheme	Grade Scheme (object_id)
p_course_year	Year of Course
p_sitting	Assesment Sitting (object_id)
p_grade_profile	Grade Profile (honours calculator)
p_maximum_mark	Maximum Mark
p_scd	Student Course detail (object_id)
p_module	Module Level
p_level	Level

All L4 Calculators

```
procedure calculate(p_scd          number,
                  p_sad_parent    number,
                  p_sitting       number,
                  p_grade_scheme  number,
                  p_structure_levels number,
                  p_session       number,
                  p_grade_year    number,
                  p_message_text  varchar2)
```

Calculator for Level 4

Parameters

p_scd	Student Course Detail (object_id)
p_sad_parent	Link to level 1 or 2 or 3 assessment (object_id)
p_sitting	Assesment sitting (object_id)
p_grade_scheme	Grade scheme (object_id)
p_structure_levels	Structure level of the course (1,2 or 3)
p_session	Academic session (e.g. 2007)
p_grade_year	Course year
p_message_text	Message for message log (visible on the form)

All Award Year Calculators

```
procedure calculate(p_instance      number,
                  p_person        number,
                  p_scd           number,
                  p_grade_scheme  number,
                  p_course_year   number,
                  p_bonded_year   number, -- not used
                  p_course        number, -- not used
                  p_session       number, -- not used
                  p_credits       number, -- not used
                  p_grade_profile number, -- not used
                  p_level         number, -- not used
                  p_module_level  number -- not used
                  )
```

Standard CampusIT Award year calculator

Parameters

p_instance	Course Instance (object_id)
p_person	Person (object_id)
p_scd	Student Course Detail (object_id)
p_grade_scheme	Grade Scheme
p_course_year	Year of Course
p_bonded_year	not used
p_course	not used
p_session	not used
p_credits	not used
p_grade_profile	not used
p_level	not used

Tracing

```
begin
  oc_trace.info('cit_l4_calculator.calculate.start p_scd=' || p_scd, --
              'p_sad_parent=' || p_sad_parent || --
              ', p_sitting=' || p_sitting || --
              ', p grade scheme=' || p grade scheme || --
              );

exception
  when absent_from_exam then
    l_student_was_absent := true;
    oc_trace.warning('cit_l4_calculator.calculate.add_assessment_details.absent_from_exam');
```

Monitoring - Example

Task:

Run L4 to L3 Calculator for Student *John Black* and for module *U3006*.

Assumptions:

- **Module Assessments:**

Course Program Assessment					
2008	U3006	U3006	EXAM		
Assessment	Description	Weight	Marks	Pass Mark	
EXAM	Exam	.5	50	40	
000100000	HANDLE MAIL	.5	50	40	

- **No L4 calculator is defined - neither globally nor for Course Instance:**

Result Entry Level	Calculator
4 - Student Assessme...	
	Calculator used

Award Year Calculator	CIT_AWARD_CALCULATOR.CALCULATE
Full Time Calculator	CIT_L1_CALCULATOR.CALCULATE
Part Time Calculator	CIT_L1_CALCULATOR.CALCULATE
Level 4 Calculator	



Monitoring - Example

Run Calculator:

- Progression Manager
- Returns Management
- Fees/Sponsor
- Results Enquiry
- Assessment Management
 - Results Entry
 - Exam Pre-Entry Maintenance
 - Exam Entry Management
 - Award Year Calculator
 - Overall Grade Management
 - Module Grade Maintenance
- Import Results
- Progression Control
- End of Year Procedures
- HETAC Exams
- Reports

NA2D10	ACCIDENT AND EMERGENCY NURSING	First Sitting
U2001	U2001	
U3006	U3006	

Assessment		Max. Wgt.fct	Gross	Pen %	Nett	Wgt.	Status
EXAM	Exam	50.0	.5	45.00	45.00	22.50	pass
000100008	HANDLE MAIL	50.0	.5	50.00	50.00	25.00	pass

Calculator Previous
Run Calculator

L3 Result (Error – no Grade):

U3005	U_3005	90.00	90.00	First Class Honours
U3006	U3006	65.00	65.00	Grade



Monitoring - Example

```
select timestamp, severity_name, message, to_char(details) from v_oc_trace where object_id > 78708711 and db_session = 321
```

	TIMESTAMP	SEVERITY_NAME	MESSAGE	TO_CHAR(DETAILS)
1	21-NOV-08 05.14.21.978 PM	[—d—]	individual_result_entry.fmx.local_level_4_calculator->dynamic_calculator.run_l4_calculator.before	Form Release Date=06-NOV-2008
2	21-NOV-08 05.14.21.994 PM	[—i—]	dynamic_calculator.run_l4_calculator.start p_scd=78700814	
3	21-NOV-08 05.14.21.994 PM	[—d—]	dynamic_calculator.run_l4_calculator.defaults_not_defined_l_calculator=cit_l4_calculator.calculate	
4	21-NOV-08 05.14.21.994 PM	[—d—]	dynamic_calculator.run_l4_calculator.execute_l_calculator=cit_l4_calculator.calculate	p_scd=78700814, p_sad_parent=787
5	21-NOV-08 05.14.21.994 PM	[—i—]	cit_l4_calculator.calculate.start p_scd=78700814	p_sad_parent=78700982, p_sitting=2
6	21-NOV-08 05.14.21.994 PM	[—i—]	cit_l4_calculator.calculate.get_grade.start p_grade=534	p_grade_scheme=9362, p_year=2
7	21-NOV-08 05.14.21.994 PM	[—i—]	cit_l4_calculator.calculate.get_grade.start p_grade=532	p_grade_scheme=9362, p_year=2
8	21-NOV-08 05.14.21.994 PM	[—i—]	cit_l4_calculator.calculate.get_grade.start p_grade=7873399	p_grade_scheme=9362, p_year=2
9	21-NOV-08 05.14.21.994 PM	[—i—]	cit_l4_calculator.calculate.get_grade.start p_grade=2198769	p_grade_scheme=9362, p_year=2
10	21-NOV-08 05.14.21.994 PM	[e—]	cit_l4_calculator.calculate.get_grade.no_grade_found	User-Defined Exception — PL/SQL
11	21-NOV-08 05.14.21.994 PM	[—i—]	cit_l4_calculator.calculate.get_grade.start p_grade=522	p_grade_scheme=9362, p_year=2
12	21-NOV-08 05.14.21.994 PM	[—i—]	cit_l4_calculator.calculate.get_lv_grade.start l_gsr=	
13	21-NOV-08 05.14.21.994 PM	[e—]	cit_l4_calculator.calculate.get_lv_grade.no_grade_found	User-Defined Exception — PL/SQL
14	21-NOV-08 05.14.21.994 PM	[—i—]	cit_l4_calculator.calculate.add_assessment_details.start p_sad_parent=78700982	p_module_instance=50510194, p_sit
15	21-NOV-08 05.14.21.994 PM	[—d—]	cit_l4_calculator.calculate.add_assessment_details return(1)=65	
16	21-NOV-08 05.14.21.994 PM	[—i—]	cit_l4_calculator.calculate.end	
17	21-NOV-08 05.14.21.994 PM	[—i—]	dynamic_calculator.run_l4_calculator.end	
18	21-NOV-08 05.14.22.009 PM	[—d—]	individual_result_entry.fmx.local_level_4_calculator->dynamic_calculator.run_l4_calculator.after	