Mock Exam

iSAQB[®] Certified Professional for Software Architecture – Foundation Level (CPSA-F[®])

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Explanations to the mock exam Certified Professional for Software Architecture - Foundation Level (CPSA-F®)

This examination is a mock exam, which is based on the certification exam of the Certified Professional for Software Architecture - Foundation Level (CPSA-F®) in form and scope. It serves to illustrate the real iSAQB® CPSA® examination as well as to prepare for the corresponding exam.

The mock exam consists of 39 multiple-choice questions, which can be evaluated with 1 or 2 points depending on the level of difficulty. At least 60 percent must be achieved to pass the exam. 50.0 points can be achieved in this mock examination, you would need 30.0 points to pass.

The following general rules apply: Correct answers result in plus points, incorrect answers result in a deduction of points, but only with regard to the respective question. If the wrong answer to a question leads to a negative score, this question is evaluated with a total of 0 points.

The multiple-choice questions of the mock exam are divided into three types of questions:

A-Questions (Single Choice, Single Correct Answer):

Select the only correct answer to a question from the list of possible answers. There is only one correct answer. You receive the specified score for selecting the correct answer. Depending on the level of difficulty, you can achieve a score of 1 or 2 points.

P-Questions (Pick-from-many, Pick Multiple):

Select the number of correct answers given in the text from the list of possible answers to a question. Select just as many answers as are required in the introductory text. You receive 1/n of the total points for each correct answer. For each incorrect cross, 1/n of the points are deducted. The score is 1 or 2 points depending on the level of difficulty.

K-Questions (Allocation Questions, Choose Category):

For a question, select the correct of the two options for each answer choice ("correct" or "incorrect" or "applicable" or "not applicable"). You will receive 1/n of the points for each correctly placed cross. Incorrectly placed crosses result in the deduction of 1/n of the points. If NO answer is selected in a line, there are neither points nor deductions. The score is 1 or 2 points depending on the level of difficulty.

For a more detailed explanation of the question types and scoring system, further information is available in the <u>CPSA-F examination rules</u>.

The processing time is 75 minutes for native speakers and 90 minutes for non-native speakers. In order to ensure that the preparation for the exam is as authentic as possible, the processing time should be adhered to and any aids (such as seminar materials, books, internet, etc.) should not be used.

The exam can subsequently be evaluated using the solution for this mock exam.

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However, it is explicitly prohibited to use these exam questions in a real examination.



Que	estion	A-Question: Select one option.	1 point
ID: Q	-20-04-	01	
How	many d	efinitions of "software architecture" exist?	
	(a)	Exactly one for all kinds of systems.	
	(b)	One for every kind of software system (e.g. "embedded", "real-time", "decis support", "web", "batch",).	ion
	(c)	A dozen or more different definitions.	
Que	estion	2 P-Question: Choose the three best aspects.	1 point
ID: Q	-20-04-	02	
Whic	h THRE	E of the following aspects are covered by the term "software architecture"?	
	(a)	Components.	
	(b)	Cross cutting concepts.	
	(c)	(internal and external) interfaces.	
	(d)	Database schemata.	
	(e)	Hardware Sizing.	
	estion		2 points
ID: Q	-17-13-	01	
Whic	ch FOUR	of the following statements about (crosscutting) concepts are most appropr	iate?
	(a)	Uniform usage of concepts reduces coupling between building blocks.	
	(b)	The definition of appropriate concepts ensures the pattern compliance of t architecture.	he
	(c)	Uniform exception handling is most easily achieved when architects agree developers upon a suitable concept prior to implementation.	with
	(d)	For each quality goal there should be an explicitly documented concept.	
	(e)	Concepts are a means to increase consistency.	
	(f)	A concept can define constraints for the implementation of many building	blocks.
	(g)	A concept might be implemented by a single building block.	



Quest	tion 4	K-Question:	Select "Appropriate" or "Not appropriate" for each line.	0 i t
ID: Q-1	7-13-0)2		2 points
softwa	re arch		d seven developers are working on the documentation o nods are appropriate in order to achieve a consistent and ch are not?	
Approp	riate	Not appropriate		
		□ (a)	The chief architect creates the documentation.	
		□ (b)	Identical templates are used for the documentation.	
		□ (c)	All parts of the documentation are automatically extracted from the source code.	
Question 5 P-Question: Choose the four best options. 1 point ID: Q-17-13-03 Which FOUR of the following techniques are best suited to illustrate the interaction of runtime building blocks?				
	(a)	Flowcharts.		
	(b)	Activity Diagrams.		
	(c)	Depiction of screen	flows (sequence of user interactions).	
	(d)	Sequence diagram.		
	(e)	Linear Venn diagrar	n.	
	(f)	Numbered list of se	quential steps.	
	(g)	Tabular description	of interfaces.	
	(h)	Class diagrams.		



Ques	tion 6		P-Question: Choose the three best options.	1 point
ID: Q-	17-13-0	4		
Which	THREE	of the	following principles apply to testing?	
	(a)	In gen	eral, exhaustive testing is not possible.	
	(b)	In com	nponents with many known previous errors, the chances for additional ϵ	errors
	(c)	Suffici	ent testing can show that a program is free of errors.	
	(d)	Testin	g can only show the existence of errors.	
	(e)	Functi	onal programming does not allow automated testing.	
Ques	tion 7		K-Question: Select "True" or "False" for each line.	2 points
ID: Q-	17-13-0	5		
	of the f are fals		ng statements regarding the design principle 'information hiding' are true	e and
True	False			
		(a)	Adhering to the "information hiding principle" increases flexibility for modifications.	
		(b)	Information hiding involves deliberately hiding information from caller consumers of the building block.	s or
		(c)	Information hiding makes it harder to distinguish between interface ar implementation.	nd
		(d)	Information hiding is a derivative of the approach of incremental refine along the control flow.	ement
		(e)	In object-oriented development, information hiding is primarily relevant class level.	t at
Ques	tion 8		P-Question: Choose the two best options.	1 point
ID: Q-	20-04-0	3		
What	are the 1	ГWO m	ost important goals of software architecture?	
	(a)	Improv	ve accuracy of patterns in structure and implementation.	
	(b)	Achiev	ve quality requirements in a comprehensible way.	
	(c)	Enable	e cost-effective integration and acceptance tests of the system.	
	(d)		e a basic understanding of structures and concepts for the developmen her stakeholders.	t team



Ques	Question 9		K-Question: Select "True" or "False" for each line.	2 points			
ID: Q-	20-04-1	12					
			osition of a software architect for a large business application in the b . Which of the following statements is true and which is false?	anking			
True	False						
		(a)	Your architecture should be structured in a way that allows changes corresponding business processes without requiring extensive restruction of the software architecture.				
		(b)	Required product qualities should drive your architectural decisions.				
☐ ☐ (c) To be independent of the infrastructure you should decide your key software architecture structure before infrastructure architects select the hardware of infrastructure for a product.							
	□ □ (d) Your software architecture should foresee changes in technology (i.e. new UI-frameworks, different deployment strategies, new peripheral devices) and only require local adaptation when it happens.						
Ques	stion 1	0	P-Question: Choose the three most important responsibilities.	2 points			
ID: Q-	20-04-0)6					
	are youi ements		E most important responsibilities as a software architect with respect	to			
	(a)	Help t tested	he business people to express quality requirements in a way that can I.	be			
	(b)	Help t	o identify new business opportunities based on your technology know	-how.			
	(c)	Reject	t business requirements that contain technical risks.				
	(d)		te business requirements in a terminology that can be understood by yopment team.	/our			



	tion 1		P-Question: Choose the three most important action items.	1 point
ID: Q-2	20-04-0	7		
	ng requi		as an architect for keeping a legacy system up and running according to sof your business. What are the THREE most important action items of	
	(a)	Negoti	iating the maintenance budget for your team.	
	(b)	Assuri	ng up-to-date documentation of the deployed system.	
	(c)	Analyz	ring the impact of new requirements on the current system.	
	(d)	Encou	raging the team members to learn new programming languages.	
	(e)		sting technology updates in addition to the business requirements to y gement.	our/
Ques	tion 1	2	K-Question: Select "True" or "False" for each line.	2 points
ID: Q-2	20-04-0	8		<u> </u>
		•	ble architect for one product in a product family. The product family hay architect. Select which of the following statements is true or false.	ıs an
True	False			
		(a)	You have to accept constraints that apply to the whole product family your product.	also for
		(b)	Since parts of this product family are separately sellable products, yo product is not bound to the constraints of the suite.	ur
		(c)	You should have regular meetings with your fellow product architects family architect to negotiate common quality requirements and const	
		(d)	You can negotiate deviations from quality requirements that have bee defined for the overall suite with the suite architect.	en



Ques	Question 13		K-Question: Select "True" or "False" for each line.	1 point
ID: Q-2	20-04-0)9		
Decide	e for ea	ch of th	e following statements whether it is true or false.	
True	False			
		(a)	Architectural cornerstones might be decided during iterative development features.	nent of
☐ ☐ (b) The total effort spent on architectural work is much higher in iterative projects compared to waterfall projects.				
☐ ☐ (c) Agile projects do not need architecture documents since the development team uses daily standup-meetings to communicate decisions.				nent
□ □ (d)			If your systems consist of a set of microservices there is no need for a central architecture document since each service is free to choose its technologies.	
Oues	tion 1	4	K-Question: Select "True" or "False" for each line.	 2 points
	20-04-1		N Question. Select True of Tailor for easitime.	<u> </u>
and w	hich is f		following statements regarding project goals and architectural goals is	s true
True	False			
		(a)	Project Goals can include functional requirements as well as quality requirements.	
		(b)	Architectural goals are a derived from the quality requirements for the or product.	system
		(c)	Business stakeholders should concentrate on business goals and not interfere with architectural goals.	
		(d)	To avoid conflicts business goals and architectural goals should be no overlapping sets.	on-



Que	estion	15 <i>P-Question: Choose the two best-fitting answers.</i>	1 point
ID: C)-20-04·	-11	<u> </u>
	t does t vers.	he rule "explicit, not implicit" mean for architecture work? Choose the TWO	best-fitting
	(a)	Architects should avoid recursive structures and replace them by explicit	t loops.
	(b)	Architects should make the assumptions leading to decisions explicit.	
	(c)	Architects should explicitly insist on natural language explanations (i.e. of for each building block.	comments)
	(d)	Architects should explicitly insist on written or at least oral justifications development effort estimates from their team.	for
	(e)	Architects should make prerequisites for their decisions explicit.	
	estion	•••	1 point
ID: C)-20-04·	-19	
Iden	tify the	THREE most appropriate examples for typical categories of software syste	ms.
	(a)	Batch system.	
	(b)	Interactive online system.	
	(c)	Linnés system.	
	(d)	Embedded real-time system.	
	(e)	Integration test system.	
Oue	estion	17 P-Question: Choose the three most often found in practice. 1 poin	<u> </u>
	(-20-04	·	
		any approaches that lead to a software architecture. Which of the following toften found in practice?	j are the
	(a)	User-Interface Driven Design.	
	(b)	Domain Driven Design.	
	(c)	View-based Architecture Development.	
	(d)	Bottom-up Design.	
	(e)	Majority Voting.	



Que	Question 18 P-Question: Choose the three most often used views. 1 point						
ID: Q	D: Q-20-04-38						
-		cture development m THREE most often u	ethods suggest a view-based approach. Which of t sed?	he following			
	(a)	Physical database v	riew.				
	(b)	Context view.					
	(c)	Building Block/Com	ponent view.				
	(d)	Test-driven view.					
	(e)	Configuration view.					
	(f)	Runtime view.					
Que	stion 1	19 K-Question:	Select "Contained" or "Avoided" for each line.	1 point			
ID: Q	-20-04-	22					
			ur software architecture. Which information should which information should be avoided?	be contained			
Cont	ained	Avoided					
		□ (a)	Interfaces.				
		□ (b)	Responsibility.				
		□ (c)	Internal structure.				
		□ (d)	Hints for the implementation.				
	stion 2	· · · · · · · · · · · · · · · · · · ·	Choose the two most appropriate answers.	1 point			
ID: Q	-20-04-	17					
		uisites have to be ful riate answers.	filled before developing a software architecture? P	ck the TWO			
	(a)	The requirements s	pecification for the system is complete, detailed ar	nd consistent.			
	(b)	The most important	qualities for the system are known.				
	(c)	Organizational cons	straints are known.				
	(d)	The programming la	anguage has been selected.				
	(e)	Hardware for the de	evelopment team is available.				



	estion	``	1 point
ID: C	20-04	-18	
		rs can influence the design of a software architecture? Pick the THREE most	
appr	opriate	answers.	
	(a)	Political.	
	(b)	Organizational.	
	(c)	Technical.	
	(d)	Virtual.	
_			
	estion		1 point
ID: C	20-04	-28	
Whic	ch of the	e following qualities can most likely be improved by using a layered architectu	re?
	(a)	Runtime efficiency (performance).	
	(b)	Flexibility in modifying or changing the system.	
	(c)	Flexibility at runtime (configurability).	
	(d)	Non-repudiability.	
Que	estion	A-Question: Select one answer.	1 point
ID: C	-20-04	-33	
For v	which ki	nd of system can the Blackboard Architecture pattern be used?	
	(a)	Hard real-time systems.	
	(b)	Rule-based systems.	
	(c)	Linnés systems.	
	(d)	Safety critical systems.	



Que	stion	24 A-Q	uestion:	Select one answer.	1 point
ID: Q	-20-04-	20			
Whic	h goals	are you trying	g to achi	eve with the dependency inversion principle?	
	(a)	Big building	j blocks	shall not depend on small building blocks.	
	(b)	Componen	ts shall b	be able to create dependent components more easily.	
	(c)	•		Il only depend on each other via abstractions.	
Que	stion	25 K-Q	uestion:	Select "Tight coupling" or "Loose coupling" for each line.	1 point
ID: Q	-20-04-	21			
What	t are cha	aracteristics o	of tight (I	nigh) or loose (low) coupling?	
Tight coup		Loose coupling			
			(a)	Building blocks directly call dependent building blocks i.e. without detours via interfaces or abstractions.	,
			(b)	Building blocks use common data types.	
			(c)	Building blocks use a common table within a relationa database.	I
			(d)	When designing building blocks, you have consistently applied the dependency inversion principle.	'
Que	stion	26 P-Q	uestion:	Choose the two best answers.	2 points
ID: Q	-20-04-	14			
word		could happer		principle "Don't repeat yourself" (DRY) are correct? (In ot s of the source code or configuration do exist in multiple	
	(a)	DRY reduce	es securi	ty.	
	(b)	Strict adhe	rence to	DRY could lead to higher coupling.	
	(c)	The compoindepender		the system that contain redundant code can be improve sch other.	d
	(d)	Adherence	to DRY I	eads to a reduction of attack vectors in IT security.	
П	(e)	Annlying th	e Laver i	natterns allows a consistent application of the DRY princ	inle



Ques	stion 2	27	K-Question: Select "True" or "False" for each line.	2 points	
ID: Q-	20-04-	15			
			ite aspects of your software architecture verbally and/or in writing. Ho late? Decide for each of the following statements whether it is true or f		
True	False				
		(a)	Verbal communication should supplement written documentation.		
		(b)	Feedback to architecture decisions should be done in writing to ensutraceability.	ıre	
		(c)	Written documentation should always precede oral communication.		
		(d)	Architects should pick one variant (oral or written) and stick to this c during the whole development.	hoice	
	stion 2		K-Question: Select "True" or "False" for each line.	2 points	
ID: Q-	20-04-	37			
Which of the following statements about notations for architectural views is true and which is false?					
		followir	ng statements about notations for architectural views is true and whic	h is	
		followir	ng statements about notations for architectural views is true and whic	h is	
false?	•	following (a)	Business Process Model & Notation (BPMN) should only be used by Analysts and not for architecture documentation.		
false? True	False		Business Process Model & Notation (BPMN) should only be used by	Business	
false? True □	False	(a)	Business Process Model & Notation (BPMN) should only be used by Analysts and not for architecture documentation. UML deployment models are the only way to document the mapping	Business of	



	stion 2		1 point
ID: Q-	20-04-1	13	
Which	n archite	ectural views do have practical application for developing software architectures	;?
	(a)	Pattern View.	
	(b)	Observer View.	
	(c)	Building-Block (or Component) View.	
	(d)	Deployment View.	
	stion 3	· · · · · · · · · · · · · · · · · · ·	1 point
ID: Q-	20-04-2	23	
		context view are a business context and a technical context. Pick the TWO most inswers that apply to the technical context.	
	(a)	The technical context contains the physical channels between your system and environment.	d its
	(b)	The technical context contains all the infrastructure on which the components your system are deployed.	of
	(c)	The technical context should include hardware pricing or pricing of cloud service used as infrastructure for your architecture.	ces
	(d)	The technical context contains information about the chosen programming land as well as all frameworks used to implement your software architecture.	iguage
	(e)	The technical context might contain different elements than the business context	ext.



Ques	tion 3	1	P-Question: Choose the two best reasons.	1 point				
ID: Q-20-04-24								
			e documentation could contain descriptions of cross-cutting concerns. is why documentation of cross-cutting concerns is useful.	Pick				
	(a)		Cross-cutting concepts should focus on the domain and be free of technical information.					
	(b)	Aspects or concepts that are used in multiple parts of your software architecture should be described in a non-redundant way.						
	(c)	Cross-cutting concepts can be reused in more products within the same organization.						
	(d)	Cross-cutting concepts should be implemented by specialists. Therefore, separate documentation is useful.						
Ουρς	tion 3	2	K-Question: Select "True" or "False" for each line.	1 point				
	20-04-2		N Question. Select True of Taise for each line.	Тропп				
What are guidelines for good interface design? Check which of the following statements is true and which is false.								
True	False	(-)	Here of interest and a shared here are seen					
		(a)	Use of interfaces should be easy to learn.					
		(b)	The client code should be easy to understand.					
		(c)	An interface should be defined by the provider of the appropriate servi	ce.				
		(d)	Interfaces specifications should contain functional and non-functional aspects.	İ				



Question 33			K-Question: Select "True" or "False" for each line. 1 point					
ID: Q-20-04-26								
develo		Check		nitecture is the sum of all the decisions you have taken du ollowing statements about architectural/design decision				
True	False							
		(a)	Architectural decisions can implicitly be contained in the structure of the building block/component view.					
		(b)	Software architects should justify all design decision in writing.					
		(c)	Architectural decisions can have interdependencies between each other.					
		(d)	Tradeoffs between conflicting quality requirements should be explicit decisions.					
Question 34 K-Question: Select "Good reason" or "No good reason" for each line. 1 poin								
ID: Q-2	20-04-3	1						
			ng statements which is no go	is a good reason for maintaining (adequate) architecture od reason?	<u>,</u>			
_		No go reaso						
			(a)	To enable onboarding of new developers.				
			(b)	To conform to legal constraints.				
			(c)	To support the work of distributed teams.				
			(d)	To assist in future enhancements of the product.				
Question 35 ID: Q-20-04-30			K-Question: S	Select "Conflicting" or "Not conflicting" for each line.	1 point			
ID. Q-2	20-04-3	O						
Which	of the f	ollowir	ng pairs of qua	lities are usually in conflict to each other, and which are	not?			
Conflic	cting	Not co	onflicting					
			(a)	Understandability – Readability.				
			(b)	Usability - Security.				
			(c)	Runtime configurability – Robustness.				
			(d)	Security – Legal Compliance.				



Question 36 P-Question: Choose the two best alternatives. 1 point					
ID: Q-20-04-27					
requ	•	rovides generic quality characteristics for software systems. How can quality s concerning these characteristics be made more concrete? Pick the TWO best	:		
	(a)	By developing UI prototypes.			
	(b)	By defining explicit interfaces.			
	(c)	By discussing or writing scenarios.			
	(d)	By creating automatic tests.			
	(e)	By creating a quality tree.			
Oue	estion	37 A-Question: Select one answer.	1 point		
	-20-04-		1 point		
Which of the following is least likely to support a qualitative analysis of your software architecture? Pick the only wrong answer.					
	(a) (b)	Metrics. Architecture models.			
	(c)				
	(d)	Quality scenarios.			
	(e)	Project status reports. Log files.			
	(5)				
	estion		2 points		
ID: Q	-20-04-	29			
	•	alyze your architecture quantitatively. Which are the TWO most appropriate indural problem areas?	icators		
	(a)	High coupling of components.			
	(b)	Inappropriate names of public methods.			
	(c)	Missing comments.			
	(d)	Error clusters.			
	(e)	Number of test cases per component.			



Que	stion 3	39 P-Question: Pick two answers.	1 point	
ID: Q	-20-04-	36		
Whic answ		following alternatives are harder to measure in your software architecture? I	Pick TWO	
	(a)	Size of building blocks (e.g. LOC).		
	(b)	Change rate of the source code of components.		
	(c)	Cohesion of the architectural components.		
	(d)	Security level of a component.		
	(e)	Number of the developers that contributed to a specific component.		