

## **Reliability Test (Cronbach Alpha Test) for Variables Selection in Secure SDLC**

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### **ABSTRACT**

*"Security enhancement" of the software development life cycle (SDLC) process mainly involves the adjustment or expansion of existing SDLC exercises, rehearses, and checkpoints, and in a couple of instances, it might likewise involve the expansion of new exercises/rehearses/checkpoints not right now included in the SDLC procedure. In a not many instances, it might likewise require the elimination or discount substitution of certain exercises or practices that are known to block the capacity to create secure software.*

***Keywords:-****Software development life cycle (SDLC), software security, Cronbach alpha test*

### **INTRODUCTION**

Secure software isn't equivalent to software that performs security-significant capacities. While the presentation of security capacities is a magnificent basis for ensuring that the software that performs them is secure, the way that software performs security-important capacities does not guarantee the software's own safe conduct and interactions. Security usefulness in a software-intensive framework is basic to assuring framework security, however does next to no to guarantee software security. A security work on which the framework depends for assurance will be of little worth if the software that has executed that capacity contains exploitable shortcomings that can be utilized to sidestep or bargain the reliable activity of that work. By a similar token, a framework that can't effectively authenticate its clients, control access to its assets, or approve computerized marks when vital will be non-secure whether or not the

ineffectively executed authentication, get to control, or mark approval software contains no exploitable software vulnerabilities. Both of framework level security and software level-security must be guaranteed for the framework to be really secure; also, the software that actualizes the framework's security segments/capacities for it to be conceivable to guarantee the framework itself is secure.

### **REVIEW OF LITERATURE**

Good natured designers are bound to catch requirements enough, and far more averse to settle on poor plan decisions and make, or if nothing else leave in, inadvertent coding blunders as software is being created. Pernicious engineers will find it exceptionally hard to secretly plant exploitable vulnerabilities, shortcomings, and pernicious rationale. Combinatorial testing will gauge in two modes. One is to live and gauge CT itself and in this way the other is to live and quantify the

framework underneath check when CT. an approach to live the CT without anyone else is through the blend inclusion. That is upheld the k-esteem blueprints tried comparative with the whole k-esteem outlines. It's risky to live the bundle quality when CT. just a couple of studies have fixated regarding this matter. we tend to establish one investigation by Salem inside which they built up an arrangement relapse model of foreseeing bundle disappointment bolstered the testing aftereffects of CT. a great deal of studies should be committed to this space. We can attempt to upgrade existing procedures of value examination upheld the qualities of CT. To advance and secure an economical investigation technique, a ton of experimental confirmations territory unit required. Another indispensable theme in CT investigation is that the investigation of applying CT to various assortments of uses and along these lines the refinements

of the testing forms. with a few encounters and experimental examinations reportable on the testing system and along these lines the utilization of CT. Brownlie et al. reportable a contextual investigation that checked PMX/StarMAIL framework abuse OATS (Orthogonal Array Testing Strategy) procedure in 1992 and built up the OATS framework to get experiments The produced check cases will see a few mistakes that had never been identified precursor.

### RESEARCH METHODOLOGY

Research Instrument: Questionnaire

Sample Size considered: 253

Rejected sample: 20

Type of Respondents: Software Engineers from SME's in Bengaluru

Duration of data Collection 6 Months

Tools used: IBM SPSS

Statistical Tests Applied: Cronbach alpha test

### RESULTS & DISCUSSIONS

**Table 1:- Case Processing Summary**

		N	%
Cases	Valid	235	92.9
	Excluded <sup>a</sup>	18	7.1
	Total	253	100.0

a. List wise deletion based on all variables in the procedure.

**Table 2:-Reliability Statistics**

Cronbach's Alpha	N of Items
.864	52

**Table 3:-Cronbach's alpha internal consistency Standard table**

Cronbach's alpha	Internal consistency
$0.9 \leq \alpha$	Excellent
$0.8 \leq \alpha < 0.9$	Good
$0.7 \leq \alpha < 0.8$	Acceptable
$0.6 \leq \alpha < 0.7$	Questionable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

From the standard table it can be observed that Reliability of the questionnaire is Good and acceptable.

**Table 4:-Cronbach's alpha Item-Total Statistics**

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Age group	116.28	274.021	.561	.858
Total experience (in years)	115.94	266.121	.547	.857
Specify your Role in the software team	116.54	275.455	.407	.860
Specify your experience only in one particular project at a time	115.07	250.132	.698	.851
As per your experience rate various reasons due to which the possibility of bug arrival you have encountered, (Rate the from 1 to 5 where 1 is the least possibility and 5 expresses the maximum possibility) - Number of developers	116.93	280.384	.355	.861
Depth of inheritance(DIT)	115.70	287.400	.036	.868
Weighted methods per class (WMC)	115.68	284.825	.087	.867
Code complexity(Complexity)	115.55	302.163	-.374	.874
Coupling between objects (CBO)	116.41	307.055	-.467	.878
Change in code	115.51	299.755	-.267	.875
File or Class size (LoC)	116.20	308.366	-.734	.876
Lack of Cohesion of Methods (LCOM)	115.90	303.135	-.457	.874
Number of previous Bugs	115.80	281.924	.181	.865
Less number of planned test cases	115.16	281.649	.499	.861
Number of modified lines	115.00	278.197	.350	.861
Determining ownership (which is often unclear)	115.73	259.114	.627	.854
More number of revisions(releases)	115.62	280.007	.328	.862
Uncovered Problem	116.14	261.908	.744	.853
Less number of planned milestones	116.51	270.140	.715	.856
Uncover problems	114.82	270.959	.739	.856
Less potential risk	116.73	283.601	.199	.864
Response from Messages (RFC)	115.62	273.049	.583	.858
Work flow	116.15	271.711	.729	.856
Unmovable development deadlines	114.90	265.981	.821	.854
Involvement of many developers	116.77	287.043	.124	.864
Change of developers in every release	116.82	271.421	.720	.856
Experience of the developer	116.43	293.323	-.219	.867
Number of different developers who modified the file in all releases	117.01	284.855	.212	.863
Number of different developers who modified the file in previous releases	117.25	287.420	.153	.864
Number of different developers who modified the file for the first time in previous releases and in the next release developers was different	117.15	279.917	.432	.861
Organization has up to date technology and processes for security	116.64	285.069	.114	.866
The physical facilities are visually appealing and secure	115.64	266.273	.769	.854
The employees are well groomed,	117.25	287.420	.153	.864

background checked and security aware				
The security controls of physical facilities are in keeping with the kind of service provided	116.10	291.289	-.081	.867
When the organization promises to do something (eg additional controls for security) by a certain time, they do so	116.94	284.044	.174	.864
When the customers have a problem (incident or security control related) the organization shows a sincere interest in solving it	116.99	281.111	.369	.861
The organization is dependable	116.24	268.894	.435	.859
They adhere to meeting security services (physical, network, application, people as required contractually) at the times they promise to do so	116.52	278.994	.273	.863
They provide error free security reports and records in a secure manner	115.64	266.273	.769	.854
They communicate to customers exactly when the security services will be performed	115.84	262.920	.720	.853
Employees / associates give prompt and secure services to customers	117.03	291.790	-.103	.867
Employees / associates are always willing to help customers in matters relating to security	116.82	271.421	.720	.856
Employees / associates are never be too busy to respond to customers' requests on matters relating to security	116.20	278.238	.346	.861
The behavior of employees / associates consistently instills confidence in customers with respect to security	116.51	273.422	.473	.859
Customers feel safe in transacting business with the employees / associates	116.62	271.665	.634	.857
Employees / associates are consistently courteous and firm with respect to security processes, with customers	116.43	278.007	.316	.862
Employees / associates have the requisite security domain knowledge to do their job well and keep their knowledge regularly updated	115.82	270.959	.739	.856
The organization gives each customer individual attention as warranted with respect to security	116.82	271.421	.720	.856
The organization does have operating hours as per the convenience of the customers in matters related to security	116.26	284.490	.125	.866
The organization has employees / associates who give personal attention to customers in matters related to security	116.99	281.111	.369	.861
The organization has customers	117.01	284.855	.212	.863

best interests regarding security at heart				
The employees / associates of the organization understand the specific security needs / regulatory requirements of their customers	116.84	289.330	-.010	.868

Above Table 4 displays the reliability value of each individual variable, It can be observed that there exists strong reliability in individual variables, so there is no need of excluding any variable.

### CONCLUSION

Ensure testing to focus on every outer quality and conjointly, inward quality by an excellent model, misuse the most noteworthy to absolute bottom of the lifecycle and logical deduction to move from framework level to component level by forming quality necessities and their extra deterioration into adequate quality attributes, sub-qualities and measures; and conjointly by abuse absolute bottom to prime of the lifecycle by action interface, incorporation, framework, and capacity associated tests misuse estimations and following collection and examination of acquired outcomes to live the degree of value.

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