



ARPN Journal of Engineering and Applied Sciences >> Call for Papers Vol. 18 No. 7, April 2023

- [Journal Home](#)
- [Archive](#)
- [Submit Paper](#)
- [Author Guidelines](#)
- [Editorial Board](#)
- [Publication Fee](#)
- [Code of Ethics](#)
- [Review Process](#)
- [Upcoming Papers](#)
- [Contact Us](#)

## ARPN Journal of Engineering and Applied Sciences

**ARPN Journal of Engineering and Applied Sciences (ISSN 1819-6608)** is an online peer-reviewed International research journal aiming at promoting and publishing original high quality research in all disciplines of engineering sciences and technology.

All research articles submitted to ARPN-JEAS should be original in nature, never previously published in any journal or presented in a conference or undergoing such process across the globe. All the submissions will be peer-reviewed by the panel of experts associated with particular field. Submitted papers should meet the internationally accepted criteria and manuscripts should follow the style of the journal for the purpose of both reviewing and editing. Our mission is .....

- In cooperation with our business partners, lower the world-wide cost of research publishing operations.
- Provide an infrastructure that enriches the capacity for research facilitation and communication, among researchers, college and university teachers, students and other related stakeholders.
- Reshape the means for dissemination and management of information and knowledge in ways that enhance opportunities for research and learning and improve access to scholarly resources.
- Expand access to research publishing to the public.
- Ensure high-quality, effective and efficient production and support good research and development activities that meet or exceed the expectations of research community.

### Scope of Journal of Engineering and Applied Sciences

- |                                    |                                      |
|------------------------------------|--------------------------------------|
| ■ Engineering Mechanics            | ■ Construction Materials             |
| ■ Surveying                        | ■ Fluid Mechanics & Hydraulics       |
| ■ Modeling & Simulations           | ■ Thermodynamics                     |
| ■ Manufacturing Technologies       | ■ Refrigeration & Air-conditioning   |
| ■ Metallurgy                       | ■ Automatic Control Systems          |
| ■ Electronic Communication Systems | ■ Agricultural Machinery & Equipment |
| ■ Mining & Minerals                | ■ Mechatronics                       |
| ■ Applied Sciences                 | ■ Public Health Engineering          |
| ■ Chemical Engineering             | ■ Hydrology                          |
| ■ Tube Wells & Pumps               | ■ Structures                         |



### Most Cited Articles (Last 4 Years)

- Investigation of Mechanical Properties of PMMA Composite Reinforced with Different Types of Natural Powders (43 Citations)
- Smart Healthcare Monitoring System using Raspberry Pi on IoT Platform (99 citations)
- The Dynamic Loading Analysis of Containers Placed on a Flat Wagon During Shunting Collisions (42 Citations)





Google Custom Search



# Source details

## ARPN Journal of Engineering and Applied Sciences

Scopus coverage years: 2009, from 2011 to 2022

Publisher: Asian Research Publishing Network (ARPN)

ISSN: 1819-6608

Subject area: Engineering: General Engineering

Source type: Journal

CiteScore 2021

1.0



SJR 2021

0.252



SNIP 2021

0.374



[View all documents >](#)

[Set document alert](#)

[Save to source list](#) [Source Homepage](#)

[CiteScore](#) [CiteScore rank & trend](#) [Scopus content coverage](#)

### Improved CiteScore methodology

CiteScore 2021 counts the citations received in 2018-2021 to articles, reviews, conference papers, book chapters and data papers published in 2018-2021, and divides this by the number of publications published in 2018-2021. [Learn more >](#)

### CiteScore 2021

$$1.0 = \frac{2,634 \text{ Citations 2018 - 2021}}{2,566 \text{ Documents 2018 - 2021}}$$

Calculated on 05 May, 2022

### CiteScoreTracker 2022

$$0.9 = \frac{1,750 \text{ Citations to date}}{1,895 \text{ Documents to date}}$$

Last updated on 05 April, 2023 • Updated monthly

### CiteScore rank 2021

Category	Rank	Percentile
Engineering		
General Engineering	#207/300	31st

[View CiteScore methodology >](#) [CiteScore FAQ >](#) [Add CiteScore to your site](#)



ARPN Journal of Engineering and Applied Sciences >> Call for Papers Vol. 18 No. 7, April 2023

[Journal Home](#)

ARPN Journal of Engineering and Applied Sciences

[Archive](#)

[Submit Paper](#)

[Author Guidelines](#)

[Editorial Board](#)

[Publication Fee](#)

[Code of Ethics](#)

[Review Process](#)

[Contact Us](#)

## Editorial Board

**Editor-in-Chief:** Engr. J. K. Tarakzai (PAKISTAN)

#	Editors	Country
1	Prof. Dr. R. J. Godwin	UNITED KINGDOM
2	Prof. Dr. Erik Valdemar Cuevas Jimenez	GERMANY
3	Dr. Iftikhar Ahmad	SAUDI ARABIA
4	Prof. Dr. Hamou SADAT	FRANCE
5	Dr. Mohammad Aminul Islam	JAPAN
6	Prof. Dr. Kui Fu Chen	CHINA
7	Dr. Muhammad Imran	AUSTRALIA
8	Prof. Dr. M. Ashraf Chaudhry	NEW ZEALAND
9	Prof. Dr. A. Sermet Anagun	TURKEY
10	Prof. Dr. Ashraf Mohamed Hemeida	SAUDI ARABIA
11	Prof. Dr. Krishna Murari Pandey	INDIA
12	Prof. Dr. Magdy A. Ezzat	EGYPT
13	Prof. Dr. Roberto Brighenti	ITALY
14	Dr. Anurag Misra	INDIA
15	Prof. Dr. Adel M. ALIMI	TUNISIA
16	Prof. Dr. Arun Kumar Gupta	GREECE
17	Prof. Demetrios V. Bandekas	GREECE
18	Prof. Dr. Bensafi Abd-El-Hamid	ALGERIA
19	Dr. Rajanish K. Kamat	INDIA
20	Prof. Dr. Asma Thamir Ibraheem	IRAQ
21	Prof. Dr. Sylejman Hyseni	KOSOVO
22	Prof. Dr. Haider Zaman	SAUDI ARABIA
23	Prof. Dr. Debojyoti Mitra	INDIA
24	Prof. Dr. Pandian VASANT	MALAYSIA
25	Prof. Dr. Prakash MMS Kinthada	INDIA

### Associate Editors

1	Dr. Dongning Li	USA
2	Dr. Suheyla Yerel	TURKEY
3	Dr. Guoxiang Liu	USA
4	Dr. Nadeem Anjum	PAKISTAN
5	Engr. Malini Sarah Philip	NORWAY
6	Dr. K.V.L.N. Acharyulu	INDIA
7	Engr. Mohammad Khalily Dermany	IRAN
8	Dr. Lamyaa- Gamal Eldeen Taha	EGYPT
9	Dr. OM Prakash Singh	INDIA
10	Engr. Seyyed Mohammad Reza Farshchi	IRAN
11	Dr. Muhammad Imran Din	PAKISTAN
12	Dr. Jose Carlos Pascoa Marques	PORTUGAL



### Most Cited Articles (Last 4 Years)

Investigation of Mechanical Properties of PMMA Composite Reinforced with Different Types of Natural Powders (43 Citations)

Smart Healthcare Monitoring System using Raspberry Pi on IoT Platform (99 citations)

The Dynamic Loading Analysis of Containers Placed on a Flat Wagon During Shunting Collisions (42 Citations)

Search

Google Custom Search

13	Engr. Fawwaz Jinan Jibrael Jabri	IRAQ
14	Dr. Kanad Ray	INDIA
15	Dr. Shamsuddin Shahid	MALAYSIA
16	Engr. Naveenji Arun	INDIA

  
  
Google Custom Search

[Home](#)

[Archive](#)

[Submit Paper](#)

[Author Guidelines](#)

[Editorial Board](#)

[Publication Fee](#)

**Title:** Analysis and implementation of operational security management on computer center at the university X

**Author (s):** Ibnu Gunawan, Agustinus Noertjahyana and Hartanto Rusli

**Abstract:** This paper presents how to asses an operational security management on computer center at the University X. In carrying out operations using information technology-based computer network, it is an organization needs to consider factors in information systems security. The Security of communication networks is absolutely necessary to be able to provide continuous service to its users. Most of the staff was involved in the making of this security policy, often feel confused in starting to work, due to not having enough experience or feeling that it will not require a policy because there was no incident related to a security policy. To resolve these problems, we need a tool to help the staff in making the security system design that is structured with implementation modules sourced from security policy and risk management module so that it can be monitored if an error occurs. In last section, this paper show how to testing by using the engine to perform the questionnaire calculations, making planning and operations. Occurs similarity between the results of risk management high risk states with a CISSP standard studied on a case study.

[Full Text](#)

---

**Title:** Design and construction of EGG shaped microstrip antenna with circular slot for ultra wideband frequency (UWB) applications

**Author (s):** Rudy Yuwono, Fitria Kumala Trisna, Erfan Achmad Dahlan, Endah BP and Aisah

**Abstract:** We proposed an egg shaped microstrip antenna with circular slot for Ultra Wideband Frequency (UWB) applications. The Antena was investigated by performing simulation and measurement. The antenna was fabricated on Phenolic White Paper materials - FR4 with dielectric constant ( $\epsilon_r$ ) = 4.5 and thicknes of 1.6 mm. From simulations and measurements, our antenna achieved UWB operating frequency of 1000 to 2700 MHz with a bandwidth of 1700 MHz. The highest gain value located at a frequency of 1.5 GHz of 5.25 dBi. The radiation pattern of antenna is bidirectional.

[Full Text](#)

---

**Title:** Design of dual band antenna for wireless MIMO communication systems

**Author (s):** M. M. Saad, J. M Yusoff, K.A. Abd Rashid, M. Senon, J.S. Hamidon, M. N. Husain, M. Z. A Abd Aziz and A. R. Othman

**Abstract:** This paper presents the design of dual band antenna by using C-shape slot technique. There are three design of different combination C-slot. The antenna is design at operating frequency of 2.4 GHz and 5.2 GHz ISM band. All antenna are design based on microstrip structure element and simulated by using Microwave CST Studio software. Then, the designed antenna was fabricated on FR4 board with dielectric constant of 4.7 and tangent loss of 0.019. All antenna can work at dual band frequency band with 90 % efficiency. The Three shape slot design has the widest bandwidth at both frequency band. Besides that, C shape slot technique can reduce the physical size of the antenna up to 50 %.

[Full Text](#)

---

**Title:** Design single stage LNA using L-matching network for WiMAX applications

**Author (s):** J Sam Hamidon, Mohd Nor Husain, Abdul Rani Othman, Kamil Pongot, Kamarul Ariffin Abd. Rashid, Muhammad Majdi Saad, Mohamad Tarmizy Ahmad and Misida Senon

**Abstract:** This paper presents a design single stage low noise amplifier(LNA) using L-matching technique for WiMAX applications. The amplifier use FHX76LP Low Noise SuperHEMT FET. The LNA designed used L-matching network consisting of lump reactive element at the input and the output terminal. The LNA produced gain of 18.34dB and noise Figure (NF) of 1.34dB. Furthermore, the input reflection ( $S_{11}$ ) and output return loss( $S_{22}$ ) are -16.25dB and -7.52dB respectively. The bandwidth of the amplifier recorded is 1.24GHz. The input sensitivity is compliant with the IEEE 802.16 standards.

[Full Text](#)

---

**Title:** Fuzzy multi-criteria evaluation of research materials based on learning style

**Author (s):** Liyana Shuib, Adeleh Asemi Zavareh and Rukaini Abdullah

**Abstract:** Current Research Materials (RM), obtained through internet search, is not in accordance with students' Learning Styles (LS). This study aims to evaluate and rank RM based on students' LS. A fuzzy evaluation method is proposed to evaluate and rank research material based on learning style. This method is able to deal with multiple critical factors, in order to evaluate RM. The fuzzification scale of linguistic variables is designed based on the expression method of fuzzy variables by students with specific learning styles. The proposed method was used to rank 10 obtained RM, in a particular research topic, for various LS. The ranking results were compared with the order of RM in a current search engine. The results of this comparison illustrate the applicability and efficiency of the method to arrange RM based on LS.

[Full Text](#)

---

**Title:** Object removal using exemplar-based in painting

**Author (s):** Kartika Gunadi, Liliana and Filbert Sugianto Manunggal

**Abstract:** Technological development is so rapid, followed by the ease of taking pictures. The problem is the hole caused by undesired object being erased. To overcome the problem, filling the hole region within the image by using the novel based exemplar method. The main advantage of using this method is the usage of order filling that is dependent on the value of the isophote and the number of source region. The result shows that the size or the shape of the object selection, gradation, diffusion of color, and blur significantly affects the result of the in painting. Priority plays a significant role in picking the color in the source region. Clear gradient not affected by light diffusion, color gradation, or blur will make a "natural" in painting result.

[Full Text](#)

---

**Title:** Performance analysis for wireless g (IEEE 802.11G) and wireless N (IEEE 802.11N) in outdoor environment

**Author (s):** Suzi Iryanti Fadilah, Abdul Samad Shibghatullah, Zuraida Abal Abas, Mohd Helmy Abd Wahab and Wan Nur Wahidah Hashim

**Abstract:** This paper described an analysis the different capabilities and limitation of both IEEE technologies that has been utilized for data transmission directed to mobile device. In this work, we have compared an IEEE 802.11/g/n outdoor environment to know what technology is better. The comparison consider on coverage area (mobility), throughput and measuring the interferences. The work presented here is to help the researchers to select the best technology depending of their deploying case, and investigate the best variant for outdoor. The tool used is Iperf software which is to measure the data transmission performance of IEEE 802.11n and IEEE 802.11g.

[Full Text](#)

---

**Title:** A review of firefly algorithm

**Author (s):** Nadhirah Ali, Mohd Azlishah Othman, Mohd Nor Husain and Mohamad Harris Misran

**Abstract:** Firefly algorithm is one of the swarm intelligence that evolve fast for almost area of optimization and engineering problems. Stand alone firefly algorithm already has managed to solve problems. For problems that have multi dimensional and nonlinear problem, some modification or even hybridization with the other metaheuristic is advisable. This modification and hybridization is to aim for help for the computational constrain and it will become more flexible and more efficient.

[Full Text](#)

---

**Title:** Semantic analysis for online travel accommodation reviews

**Author (s):** Phichayasini Kitwatthanathawon, Thara Angskun and Jitimon Angskun

**Abstract:** Currently, most tourists use the Internet to retrieve information for supporting their decision in selecting the tourist places that conform to their preferences. The most common method is the decision based on reviews of experienced tourists. However, tourists must read enormous reviews in order to select their preferred tourist places. This article presents an analysis module for online travel accommodation reviews. The analysis module combines several techniques, such as ontology, natural language processing, and fuzzy logic. However, this article focuses on applying the natural language processing for semantic analysis to solve the accommodation feature extraction problems. The experimental results of the feature extraction process are achieved in 79.22% of overall accuracy, 100% of overall precision, and 76.05% of overall recall.

[Full Text](#)

---

**Title:** Clay soil stabilization with lime effect the value CBR and swelling

**Author (s):** Gati Sri Utami

**Abstract:** Subgrade was a very important part to support all construction loads on it. If the clay subgrade that had unfavorable properties, such as low CBR, the high swelling when applied to the construction of the road subgrade soil would produce a soil that is easily damaged. For that, if used in the construction of CBR value should be towering so that it can withstand a load on it. The swelling would reduce the volume of soil that is stable when it rains the soil is not swollen, otherwise when the dry season does



## ANALYSIS AND IMPLEMENTATION OF OPERATIONAL SECURITY MANAGEMENT ON COMPUTER CENTER AT THE UNIVERSITY X

Ibnu Gunawan, Agustinus Noertjahyana and Hartanto Rusli

Department of Informatics Engineering, Faculty of Industrial Technology, Petra Christian University, Surabaya, Indonesia

E-Mail: [ibnu@petra.ac.id](mailto:ibnu@petra.ac.id)

### ABSTRACT

This paper presents how to assess an Operational Security Management on Computer Center at the University X. In carrying out operations using information technology-based computer network, it is an organization needs to consider factors in information systems security. The Security of communication networks is absolutely necessary to be able to provide continuous service to its users. Most of the staff was involved in the making of this security policy, often feel confused in starting to work, due to not having enough experience or feeling that it will not require a policy because there was no incident related to a security policy. To resolve these problems, we need a tool to help the staff in making the security system design that is structured with implementation modules sourced from security policy and risk management module so that it can be monitored if an error occurs. In last section, this paper show how to testing by using the engine to perform the questionnaire calculations, making planning and operations. Occurs similarity between the results of risk management high risk states with a CISSP standard studied on a case study.

**Keywords:** CISSP, security, planning and operational.

### INTRODUCTION

In carrying out operations based on information technology, especially with the use of a computer network infrastructure, organizations not only need to make a good information system, but also need to consider the safety factor as one of the supporting information systems are reliable. Secure communications network is absolutely necessary to keep the organization in order to always be able to provide continuous service to its members. The need for this security system needs to be clearly defined and may ultimately be implemented in practice to be able to support operations in an organization's information systems. By applying the appropriate procedures for each activity, it is expected to be able to judge the right to security needs in accordance with what is required by the organization (Danchev, 2013).

To be able to build a security policy that provides a good foundation in the future, then the first step that must be developed is to create a security policy that can reduce the risk of misuse of the resources available in the organization.

Most of the staff were involved in the making of this security policy, often feel confused in the start of manufacture, because did not have enough experience or feeling not require a security policy because there was no incident related to a security policy.

This paper will show how to assess an Operational Security Management on Computer Center At the University X by applying risk management with CISSP knowledge to the operational security management on computer center at the university x.

### RISK MANAGEMENT

Risk management is a combination of the three processes (Stoneburner, 2013), namely: Risk Assessment, Risk Mitigation and evaluation.

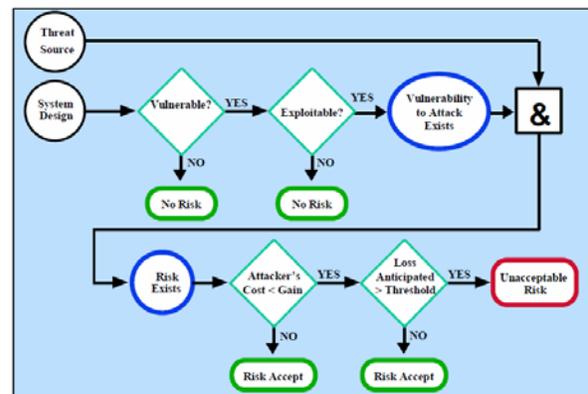
#### a) Risk Assessment

The steps to perform risk analysis is as follows (Stoneburner, 2013):

- System Characterization
- Threat Identification
- Vulnerability Identification
- Control Analysis
- Likelihood Determination
- Impact Analysis
- Risk Determination
- Control Recommendations
- Results Documentation

#### b) Risk Mitigation

Good strategy to perform risk mitigation can be seen in Figure-1 (Stoneburner, 2013).



**Figure-1.** Risk mitigation strategy (Stoneburner, 2013).

#### c) Risk Evaluation and Control

For the implementation of controls to prevent possible risks, organizations need to think about both the



process control technically, management and operations, or do a combination of more than one control that aims to further streamline the process control of IT systems in the organization.

- Technical Control  
Technical controls can be grouped into 4 main categories like Figure-2
- Management Security Control
- Operations Security Control

### CISSP

CISSP (Certified Information System Security Professional) is a certification in the field of information security. (Conrad, 2010) In accordance with current global progress, the need for security and development in the field of technology continues to evolve. Safety first is a hot issue in the technology alone, but now has become part of our lives everyday. Security noticed by any organization, government agencies, companies, and even military units. CISSP itself divides the definition of security in 10 areas called with 10 domains. 10 domains are considered to include all the parts of a computer, network, business, and security information. 10 domains in the CISSP are as follows:

1. Domain 1: Information Security Governance and Risk Management
2. Domain 2: Access control
3. Domain 3: Cryptography
4. Domain 4: Physical (Environmental) Security
5. Domain 5: Security Architecture and Design
6. Domain 6: Business Continuity and Disaster Recovery Plan
7. Domain 7: Telecommunications and Network Security
8. Domain 8: Application Development Security
9. Domain 9: Operations Security
10. Domain 10: Legal, Regulations, Investigation, and Compliance

### REQUIREMENT ANALYSIS

University X is currently growing more rapidly with a mission of "IT - based campus" which means to use information technology more prevalent not only among faculty, staff, and staff but also the students who are in it. For example, for a staffing system that uses a special application, the system input value for each lecturer can enter grades online, academic system that provides registration services online student study plans, as well as other support systems.

With these examples can be seen more and more systems started there and where any employee or student to use the same code for each system, so in this case required a security policy.

Given the problems it is necessary to do an analysis of the risk to the risk that information technology can impact the operations of University X. Through risk analysis, especially the university computer center which was subjected to more easily we can know the risks of

what could happen, measure how big the risk is, and how its impact, and get the results of risk calculations Which is of particular concern to the risk that is not a priority special.

Of the subject has been mentioned that the central computer can handle all the problems that exist and also take the policy from the calculation of risk that has been done. Thus the security system central computer can be safe and well monitored.

The most difficult thing to do is mapping CISSP standard to risk management standard in order to create a questionnaire for capturing the truly characteristic of existing policy on university computer center x (Miller, 2012)

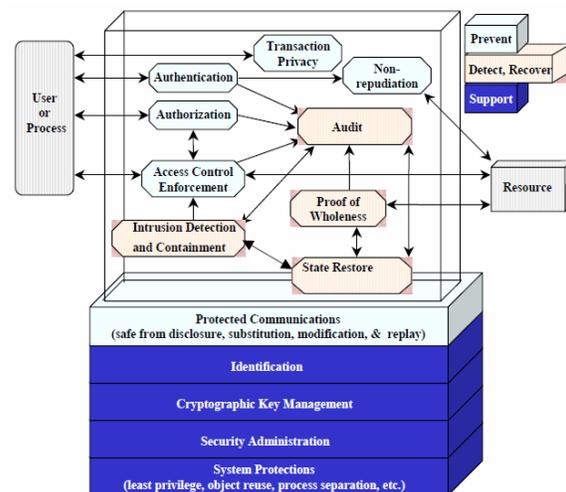


Figure-2. Technical control (Stoneburner, 2013).

### RISK ANALYSIS

Here is an example of questioner resulted of mapping questioner CISSP standards and risk management that we do to some of the existing policy on university computer center x divided by user and system owner:

User Questioner sample:

#### a. Access Control

Questioner: 1. how often do you change your email password?

- Once a month
- 3 months
- once a year
- never

#### b. Security Architecture and Design

Questioner: 11. According to you, what qualities (specs) provided computer by computer center?  
a. Is sufficient b. mediocre c. less worthy.

#### c. Physical and Environmental Security

Questioner: 15. How do you think about the environment control such as the placement of electrical wiring, placement of personnel, and fire safety?

- Less well
- pretty good
- very good

**d. Telecommunications and Network Security**

Questioner: 20. Did you know the IP address version 6?

a. Yes b. not

**e. Cryptography**

Questioner: 30. Was your password consists of a combination of small capital letters, containing numbers, and other requirements?

a. Yes b. not

**f. Business Continuity and Disaster Recovery Planning**

Questioner: 32. The event of a power failure during the learning process, if there is such a power generator to power the lights back on?

a. Yes b. not

**g. Legal, Regulations, Investigations, and Compliance**

Questioner: 35. Did you ever take advantage of the software license provided by the Computer Center as a CD-Key of Windows and other applications?

a. Yes b. not

**h. Software Development Security**

Questioner: 39. How does the quality of the software provided by the Computer Center? (if often error)

a. Excellent b. Fine, rare error c. Poor, often an error

**i. Operations Security**

Questioner: 41. How often do you see drivers (hard drive, flash) after accessing your computer infected with viruses at University X?

a. Often b. Rarely c. never

Owner Questioner sample:

(a) Access Control

Questioner: 6. How many times authentication error tolerance limits owned by the user?

a. 3 times b. 5 times c. 10 times d. no restrictions

(b) Security Architecture and Design

Questioner: 11. Is there a certain standard of maintenance of the computers used in the Computer Center Petra?

a. There, ..... b. Not c. Do not know

(c) Physical and Environmental Security

Questioner: 16. How often the air conditioner (AC) to the central computer room or server room in the service?

a. 1 month b. 3 months c. 1 year d. never

(d) Telecommunications and Network Security

Questioner: 29. Was there ever a network connection at the University experience down?

a. Ever,..... times b. Never c. Do not know

(e) Cryptography

Questioner: 37. Is there a standard encryption method to be applied to the document storage?

a. Yes b. Not c. Do not know

(f) Business Continuity and Disaster Recovery Planning

Questioner: 39. Are there certain parts that perform the steps Bussiness Impact Analysis (BIA) in the event of an accident?

a. Yes b. Not c. Do not know

(g) Legal, Regulations, Investigations, and Compliance

Questioner: 52. Was used software are protected from SQL Injection?

a. Yes b. Not c. Do not know

(h) Software Development Security

Questioner: 62. Was meeting minutes in a paper shredder if it is not used?

a. Yes b. Not c. Do not know

And the some of the result can be seen on Figure-3.

**SYSTEM DESIGN**

We will describe from system analysis to system design:

**i. System analysis**

For the purpose of obtaining information necessary for the design of security systems, need to be made questionnaire addressed to the user or population. Making questionnaires starting the login process, if entered as a guest it can only work on the questionnaire. If entered as admin then can create a project in which there is a menu -making questionnaire.

No.	Soal	Percentage Score	Likelihood
1	How often do you change your email password		
	A month	0	0
	3 month	2	0
	A year	21	2
	never	77	8
2	Do you log out after use email and the web service (sim.xxx.ac.id) University?		
	Yes	70	8
	Sometimes	18	2
	never	12	0
3	Is University X service that is easy you access the website?		
	easy	55	5
	sometimes	41	5
	hard	4	0
4	Is there any process other than password authentication when you login? (example: after entering the password, you will be asked to fill out a captcha or pin)		
	Yes	9	0
	no	73	8

**Figure-3.** Example risk analysis questioner result.

Project data will be stored into the database and the admin can continue on making the questionnaire. After that, the admin can create problems questionnaire and each



question will be saved in the database after stored, will directly Replaces zoom with Javascript using Ajax. Having had enough to make the necessary questionnaire questions, the admin can publish that question to be accessed and filled out by the user. Then after the user has filled out a questionnaire with a sufficient amount, then the application will make the process of scoring and the score will be recorded in the database.

The results of the scoring will be continued on the risk analysis process to find the priority, then the priority will be known by the admin and can continue on the planning process. In the planning process, the system will mendapatkan priority data are consistent with the risk management process and entered into the database. Once the domain sorted by priority which is more important.

From the results that the user can view the guidelines to do to design a security system based on standard CISSP and will proceed to the operational process. At the operational processes, the admin can review the selected design in the planning process in accordance with the planning months on submit. In operation page can print the report.

To provide a login feature, create project, view the questionnaire, the questionnaire publish, view answers to questionnaires, planning, and operational then built a system which consists of four components, namely, PHP, Web Services, Javascript, and database servers. In PHP component, there is the user interface for loggings, manufacture of a new project, view project, questionnaire development, view the questionnaire, and publish the questionnaire.

To perform these features, the web service is needed in order to display the project data and questionnaire data. The data obtained from the database server component.

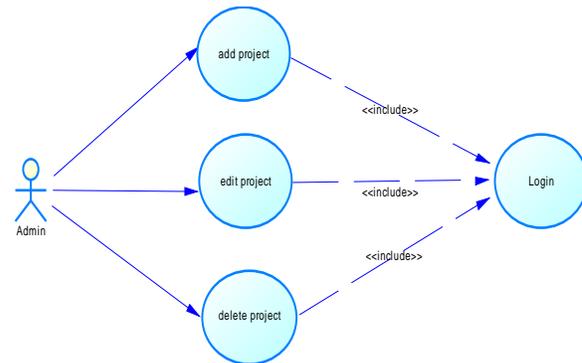
That is a MySQL database that is stored on the server. Access to the database is done by the web service components then the data is displayed every time the user accesses the page questionnaire project or appearance. To be able to perform the create, view, update, and delete the database required admin privileges (Dubois 2013).

## ii. System design

In general, the application is made is divided into two parts, namely the design of the system admin and Guest. In the design of the admin and guest system will be described by using use case and activity diagrams (Gomaa, 2011).

### a. admin system design

In the admin system design is necessary to design a system design to fit the needs.



**Figure-4.** Use case diagram on page project admin.

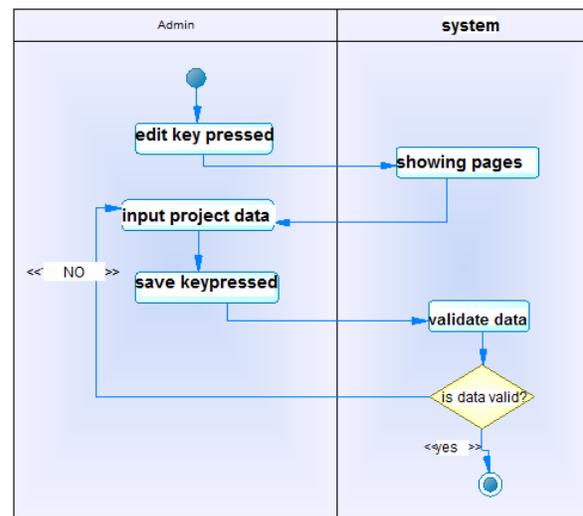
A system design using Use Case Diagram and Activity Diagram is used to model the behaviors of users at once describe a work flow system and the system components. For more detail example, please see Figure-4.

After we compose an use case diagram, next we move to the activity diagram. For a single example, please see Figure-5.

## SYSTEM IMPLEMENTATION

This section will explain the implementation of the interface and implementation of an application system that has been created. In order for the program to run properly, you should perform the installation on the computer prior to use. Software necessary for the program to run properly is to use notepad ++ and XAMPP localhost server. In making this application requires a connection using localhost as quickly as do the development and testing of applications.

The process of making a software application in the project will use the PHP language with the help of Javascript and Ajax to make the user interface more attractive. For database management, using PhpMyAdmin.



**Figure-5.** Activity diagram admin edit project.



And then we can build an entity relationship diagram like showed on Figure-6 on the next page. After we build our database then we can move on to design our application user interface. We showed one of them on Figure-7.

The screenshot shows a web-based questionnaire with four questions. Each question has a title, a list of multiple-choice options (A, B, C, D), and 'Edit' and 'Delete' buttons. The questions are:

1. Seberapa sering anda mengganti password email?  
A. Sebulan sekali  
B. 3 Bulan sekali  
C. 1 Tahun sekali  
D. Tidak Pernah
2. Apakah anda melakukan log out setelah memakai email dan web service (sim.petra.ac.id) dari Universitas Kristen Petra?  
A. Ya  
B. Kadang-kadang  
C. Tidak Pernah
3. Apakah layanan Universitas Kristen Petra yang bersifat website mudah anda akses?  
A. Mudah  
B. Kadang-kadang  
C. Sulit
4. Adakah proses autentikasi lain selain password pada saat anda melakukan login? (contoh: setelah memasukan password, anda akan diminta pin atau mengisi captcha)  
A. Ya  
B. Tidak  
C. Tidak Tahu

**Figure-7.** UI design.

We use standard library has been used by many programmers in the world to make a good web application and accompanied by supporting the use of other libraries. Some libraries used in the application of this thesis include:

- Ajax, which is used to make the user interface more attractive to look at.
- JQuery-ui, which is used to make the look fresher and more colorful. for example source code we can see on Figure-8.

## SYSTEM TESTING

This section will describe the results of the testing of the software to evaluate the results of the calculation of

the questionnaire to preparing operational reports. As for the types of tests performed, among others:

- Tests on the calculation of the questionnaire.
- Tests on the planning results.
- Testing of operational reports.
- Tests on the results of standardized management CISSP.

### Tests on the calculation of the questionnaire

In the software will do the calculations testing the questionnaire as an administrator and the steps needed to achieve calculation of the questionnaire?

To achieve the calculation of the questionnaire, the user needs to do:

- a) Perform login as we can see on Figure-9
- b) Creating a project as we can see on Figure-10
- c) Creating a questionnaire as we can see on Figure-11
- d) Publishing the questionnaire as we can see on Figure-12
- e) Seeing the results of the percentage of responses to questionnaires as we can see on Figure-13.

### Tests on the planning results

Tests conducted on the parameter selection of standard CISSP per domain, the addition of a custom planning, and manufacturing planning. Testing begins from planning to go to the admin page. Planning page aims to provide a security administrator is not standard raw CISSP Security Administrator to assist in the making of a good security system. This planning page gets the input data is a result of risk management priorities and made the accordion and classification based on per domain CISSP. For the result we can see on Figures 14, 15, and 16.

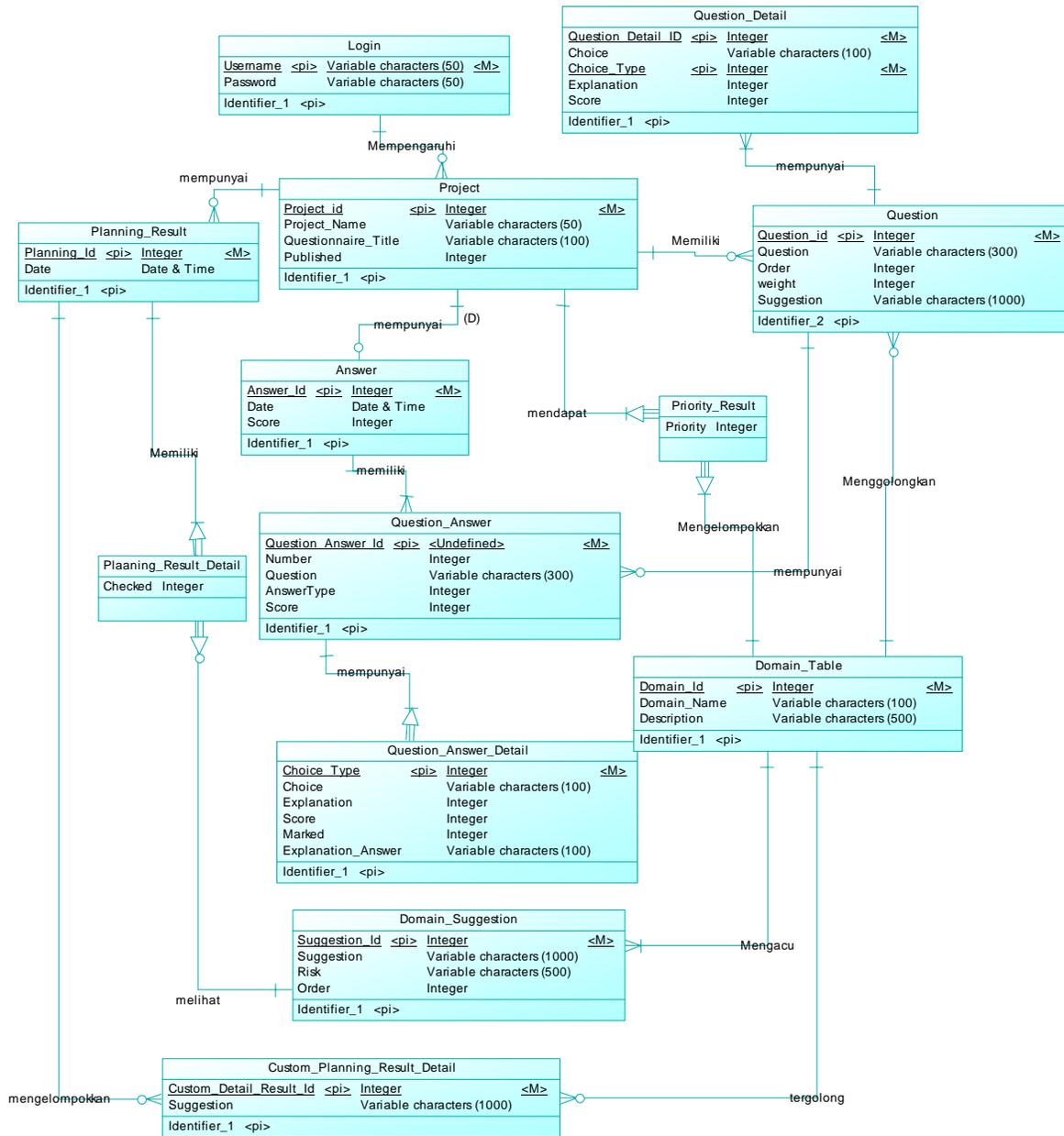


Figure-6. E-R diagram.

```

openAddDialog = function(){
$("#nama").val("");
$("#judul kuesioner").val("");
$("#adddata").dialog("open");
mode = 'add'; editId = 0;}
    
```

Figure-8. Example source code.



Figure-9. Perform login.

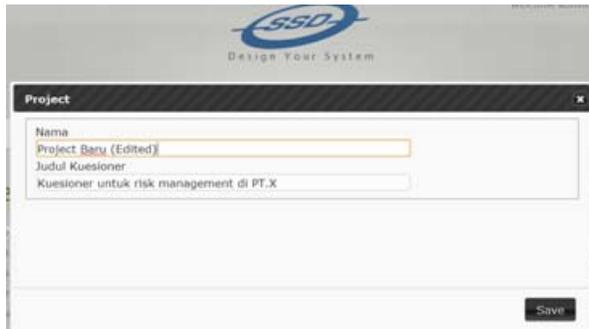


Figure-10. Creating a project.



Figure-13. Percentage result.

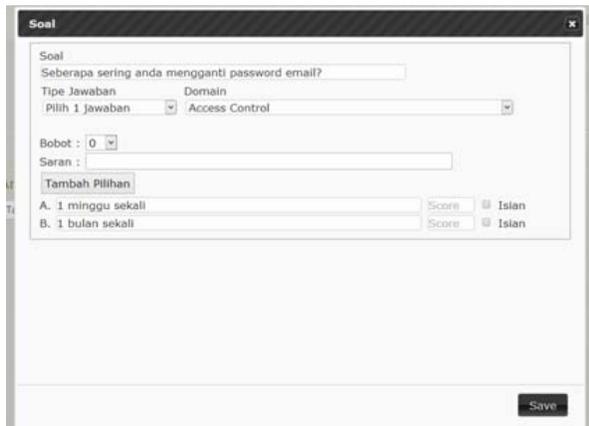


Figure-11. Creating a questionnaire.



Figure-14. planning result on admin pages.



Figure-12. Publishing questionnaire.

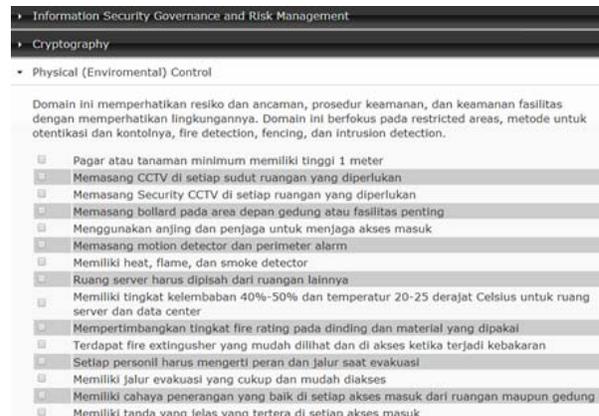


Figure-15. CISSP list standard.

### Testing of operational reports

Tests conducted on election planning parameters, the addition of a custom planning, planning and record keeping.

The test starts with the opening page of the menu operations through operations on the home page. Upon entry into the operational page, the user can select a link in the form of month and year format in accordance with the planning in the submit. The goal is for a review of the



standard CISSP selected on the planning process. We can see the result start on Figure-17, Figure-18, to Figure-19.

**Tests on the results of standardized management CISSP**

In the software will be tested in the operational process proceeds by month and year of planning was made. Tests carried out on standard-making parameters CISSP, CISSP standard modification, and deletion of the CISSP standard.

**Tests on the results of standardized management CISSP**

In the software will be tested in the operational process proceeds by month and year of planning was made. Tests carried out on standard-making parameters CISSP, CISSP standard modification, and deletion of the CISSP standard.



Figure-16. Adding domain suggestion.



Figure-17. Operational testing.

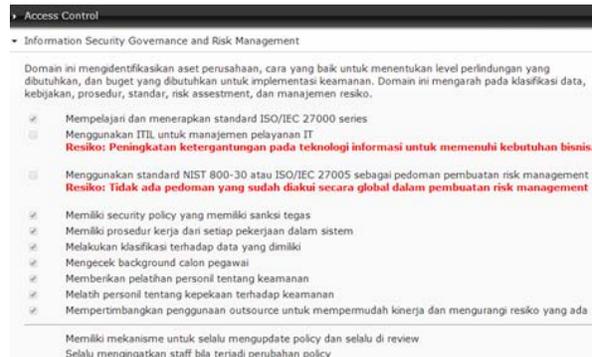


Figure-18. adding operational list detail.



Figure-19. Downloadable report.

The first step taken by the user is to login as the auditor as can be seen in Figure-20.



Figure-20. Log in as an auditor.

After auditors login, then the user will go to the main menu as an auditor as we can see in Figure-21.



**Figure-21.** Auditor menu.

After entering as an auditor, the user can choose to view the menu and edit standard CISSP domains of the CISSP. CISSP Domain menu, the user can see the description of the 10 domains of the CISSP. CISSP Domain menu at all access login as admin and guest. We can see it on Figure-22.

Once users see what CISSP 10 Domains and description, users can perform on Standards CISSP management by selecting the Edit menu CISSP Standards. As we can see on Figure-23.



**Figure-22.** CISSP 10 domain menu.



**Figure-23.** CISSP standard edit menu.

## CONCLUSIONS

Based on a system that has been developed and the results of the testing that has been done, we can conclude some of the following:

- we have been made a editable questionnaire engine for Security Administrator so that it can be changed by the user or in a custom suit your needs.
- It takes a long time to make access to the database. The cause of this can be assumed from XAMPP localhost program that is not compatible with Windows 8, or due to use mysql as the database programming language that led to slower access speeds as seen many case studies that use a MySQL database programming language gain access speed is much faster.
- There are similarities between the results of risk management stating risk in a high risk category to the CISSP standard on the operational part. The things that need to be considered by the Computer Center, is giving the password on the storage media (flash, portable hard drive), imposes limits on the user authentication fault tolerance, disaster evacuation drills Giving, Restrict access so that employees can not do indiscriminate access outside offices, and users rarely or never change the password periodically

## REFERENCES

- Conrad Eric. 2011. Eleventh Hour CISSP Study Guide. Syngress, 2010.
- Danchev Dancho. 2013. Building and Implementing a Successful Information Security Policy. Internet Software Marketing. Windows Security.com
- Dubois Paul. 2013. MySQL (Developer Library) 5 ed. Addison-Wesley.
- Gomaa Hassan. 2011. Software Modeling and Design: UML, Use Cases, Patterns, and Software Architectures. Cambridge University Press.
- Miller C Lawrence. 2012. CISSP for dummies. For Dummies.
- Stoneburner Gary., Alice Goguen and Alexis Feringa. 2013. Risk Management Guide for Information Technology System. NIST Special Publication 800-30 rev1.