Project Report of B.Sc. 2nd year Student

Project Report.

।। ज्ञानम् परम् ध्येयम्।।

Shri Shivaji Education Society, Amravati's

SHRI SHIVAJI SCIENCE & ARTS COLLEGE, CHIKHALI
Dist. Buldana

Internal Assessment - Assignment / Project Report / Seminar

Name of the Student Sachin Gajanan Surushe

Class B.Sc. 2nd year (Sem. IVth.)

Academic Session : 20 21 - 20 22

Marks Obtained : 04/04 Bandi

Shri Shivaji Education Society, Amravati's

SHRI SHIVAJI SCIENCE & ARTS COLLEGE, CHIKHALI

Dist. Buldana

CERTIFICATE

Name of Department: Department of Computer Science

Academic Session : 20 21 - 20 22

This is to certify that this Assignment/Project Report/Practical Book, Contains the Bonafide Record of Shri/Kumari/Shrimati Sachin Gajanan Surushe of B.Sc. 2nd year (Semester IVth) during the academic Session 20 21 - 20 22.

The Topic of the assignment / Project Report is S.W.I.F.T (Society for Worldwide Interbank Financial Telecommunication

Dated 21/04/2022

Signature of the Teacher
who guide / taught the Examinee.

1. Dr. A.B. Kadam.
2. Dr. S.S. Gaikwad

Head of the Dept.

Head
Dept. Of Computer Science
Shri Shivaji Sci. & Arts College
Chikhli, Dist. BULDANA (M.S.)

Note : In absence of certificate for Assignment / Project Report / Practical Book examiner shall not be allowed to appear for the examination.

SANT GADGE BABA AMARAVATI UNIVERSITY, AMARAVATI, MS, INDIA

Shri Shivaji Science & Arts College, Chikhli

Project Report on

S.W.I.F.T.

(Society for Worldwide Interbank Financial Telecommunicatins)

In partial fulfillment of requirements for the degree of Bachelor of Science

Submitted by:

Sachin Gajanan Surushe

Under the Guidance of:

Dr. A. B. Kadam

Department of Computer Science

Shri. Shivaji Science & Arts College, Chikhli – 443 201,
Dist- Buldana (M.S.) March, 2022

CERTIFICATE

This is to certify that the**Project Reprt** entitled "**S.W.I.F.T.**" has been submitted by **Sachin GajananSurushe** under my guidance in partial fulfillment of the degree of Bachelor of Science of SantGadge Baba Amravati University, Amravati during the academic year 2021-2022 (B.Sc.II Semester-IV).

Date : 18 April, 2022.

Place: Chikhli.

Name of Guide.

Dr. A. B. Kadam

Dr. S. S. Gaikwad

Head of the Department

Dr. A. B. Kadam

Acknowledgement

I would like to thank to the Department of Computer Science to give me this opportunity to present a **Project Report** on my topic **S.W.I.F.T**. Also I would like to thank the teachers Dr. A. B. Kadam , Dr. S. S. Gaikwad, Dr. M. E. Jadhao to help me gather the information about my topic and help to go in depth of the topic.

- I am very thankful to our principal Dr. O. S. Deshmukh .
- Also, I am very thankful to our non teaching staff Mr. S. A. Chavan and Mr. P. S. Sonune.

I am absolutely sure thet this program will help me in near future.

Thank you

Sachin GajananSurushe

INDEX

S.W.I.F.T.

Introduction

The Society for Worldwide Interbank Financial Telecommunication (SWIFT), legally S.W.I.F.T.SC, is a Belgian cooperative society providing services related to the execution of financialTransactions and payments between banks worldwide. Its principal function is to serve as the Main messaging network through which international payments are initiated. It also sells Software and services to financial institutions, mostly for use on its proprietary "SWIFTNet", and ISO 9362 Business Identifier Codes (BICs), popularly known as "SWIFT codes".

The SWIFT messaging network is a component of the global payments system.SWIFT actsAs a carrier of the "messages containing the payment instructions between financial institutionsInvolved in a transaction[8]."However, the organization does not manage accounts on behalf of individuals or financial institutions, and it does not hold funds from third parties.It also does notperform clearing or settlement functions. After a payment has been initiated, it must be settled through a payment system, such as TARGET2 in Europe.In the context of cross-borderTransactions, this step often takes place through correspondent banking accounts that financialInstitutions have with each other.

As of 2018, around half of all high-value cross-border payments worldwide used the SWIFT network, and in 2015, SWIFT linked more than 11,000 financial institutions in over 200 countries and territories, who were exchanging an average of over 32 million messages per day (compared to an average of 2.4 million daily messages in 1995).

Though widely utilized, SWIFT has been criticized for its inefficiency. In 2018, the London-based Financial Times noted that transfers frequently "pass through multiple banks before reaching their final destination, making them time-consuming, costly and lacking transparency on how much money will arrive at the other end". SWIFT has since introduced an improved service called "Global Payments Innovation" (GPI), claiming it was adopted by 165 banks and was completing half its payments within 30 minutes. As a cooperative society under Belgian law, SWIFT is owned by its member financial institutions. It is headquartered in La Hulpe, Belgium, near Brussels[7]; its main building was designed by Ricardo Bofill Taller de Arquitectura and completed in 1989. The chairman of SWIFT is Yawar Shah of Pakistan, and its CEO is Javier Pérez-Tasso of Spain. SWIFT hosts an annual conference, called Sibos, specifically aimed at the financial services industry.

History

SWIFT was founded in Brussels on 3 May 1973 under the leadership of its inaugural CEO, Carl Reuterskiöld (1973–1989), and was supported by 239 banks in 15 countries. Before its establishment, international financial transactions were communicated over Telex, a public system involving manual writing and reading of messages[9]. It was set up out of fear of what might happen if a single private and fully American entity controlled global financial flows – which before was First National City Bank (FNCB) of New York – later Citibank. In response to FNCB's protocol, FNCB's competitors in the US and Europe pushed an alternative "messaging system that could replace the public providers and speed up the payment process". SWIFT started to establish common standards for financial transactions and a shared data processing system and worldwide communications network designed by Logica and developed by the Burroughs Corporation.Fundamental operating procedures and rules for liability were established in 1975, and the first message was sent in 1977. SWIFT's first international (non-European) operations center was inaugurated by Governor John N. Dalton of Virginia in 1979.

STANDARDS

SWIFT has become the industry standard for syntax in financial messages. Messages formatted to SWIFT standards can be read and processed by many well-known financial processing systems, whether or not the message traveled over the SWIFT network. SWIFT cooperates with international organizations for defining standards for message format and content. SWIFT is also Registration authority (RA) for the following ISO standards:

- SO 9362: 1994 Banking – Banking telecommunication messages – Bank identifier codes ISO 10383: 2003 Securities and related financial instruments – Codes for exchanges and market identification (MIC) ISO 13616: 2003 IBAN Registry ISO 15022: 1999 Securities – Scheme for messages (Data Field Dictionary) (replaces ISO 7775) ISO 20022-1: 2004 and ISO 20022-2:2007 Financial services – Universal Financial Industry message scheme In RFC 3615 urn:swift: was defined as Uniform Resource Names (URNs) for SWIFT FIN[3].

OPERATIONS CENTER

The SWIFT secure messaging network is run from three data centers, located in the United States, the Netherlands, and Switzerland. These centers share information in near real-time. In case of a failure in one of the data centers, another is able to handle the traffic of the complete network. SWIFT uses submarine communications cables to transmit its data. Shortly after opening its third data center in Switzerland in 2009, SWIFT introduced new distributed architecture with two messaging zones, European and Trans-Atlantic, so data from European SWIFT members no longer mirrored the U.S. data center. European zone messages are stored in the Netherlands and in part of the Swiss operating center; Trans-Atlantic zone messages are stored in the United States and in another part of the Swiss operating center that is segregated from the European zone messages[10]. Countries outside of Europe were by default allocated to the Trans-Atlantic zone, but could choose to have their messages stored in the European zone.

Data centers SN SWIFT data centers 1 Zoeterwoude, Netherlands 3 Diessenhofen, Switzerland Type OPC (Operating Center) 2 Culpeper, Virginia, United States OPC (Operating Center) OPC (Operating Center) 4 Hong Kong Command and control

SWIFTNetnetwork

SWIFT moved to its current IP network infrastructure, known as SWIFTNet, from 2001 to 2005, providing a total replacement of the previous X.25 infrastructure. The process involved the development of new protocols that facilitate efficient messaging, using existing and new message standards. The adopted technology chosen to develop the protocols was XML, where it now provides a wrapper around all messages legacy or contemporary[2]. The communication protocols can be broken down into:

InterAct

- SWIFTNetInterActRealtime
- SWIFTNetInterAct Store and Forward

FileAct

- SWIFTNetFileActRealtime
- SWIFTNetFileAct Store and Forward

Browse

- SWIFTNet Browse

Architecture

SWIFT provides a centralized store-and-forward mechanism, with some transaction management. For bank A to send a message to bank B with a copy or authorization involving institution C, it formats the message according to standards and securely sends it to SWIFT. SWIFT guarantees its secure and reliable delivery to B after the appropriate action by C. SWIFT guarantees are based primarily on high redundancy of hardware, software, and people.

SWIFTNet Phase 2

During 2007 and 2008, the entire SWIFT network migrated its infrastructure to a new protocol called SWIFTNet Phase 2. The main difference between Phase 2 and the former arrangement is that Phase 2 requires banks connecting to the network to use a Relationship Management Application (RMA) instead of the former bilateral key exchange (BKE) system. According to SWIFT's public information database on the subject, RMA software should eventually prove more secure and easier to keep up-to-date; however, converting to the RMA system meant that thousands of banks around the world had to update their international payments systems to comply with the new standards. RMA completely replaced BKE on 1 January 2009.

Products and interfaces

SWIFT means several things in the financial world: 1. A secure network for transmitting messages between financial institutions; 2. A set of syntax standards for financial messages (for transmission over SWIFTNet or any other network) 3. A set of connection software and services allowing financial institutions to transmit messages over SWIFT network. Under 3 above, SWIFT provides turn-key solutions for members, consisting of linkage clients to facilitate connectivity to the SWIFT network and CBTs or "computer based terminals" which members use to manage the delivery and receipt of their messages. Some of the more wellknown interfaces and CBTs provided to their members are: SWIFTNet Link (SNL) software which is installed on the SWIFT customer's site and opens a connection to SWIFTNet. Other applications can only communicate with SWIFTNet through the SNL. Alliance Gateway (SAG) software with interfaces (e.g., RAHA = Remote Access Host Adapter), allowing other software products to use the SNL to connect to SWIFTNet Alliance WebStation (SAB) desktop interface for SWIFT Alliance Gateway with several usage options: 1. Administrative access to the SAG 2. Direct connection SWIFTNet by the SAG, to administrate SWIFT Certificates 3. So-called Browse connection to SWIFTNet (also by SAG) to use additional services, for example Target2 Alliance Access (SAA) and Alliance Messaging Hub (AMH) are the main messaging software applications by SWIFT, which allow message creation for FIN messages, routing and monitoring for FIN and MX messages. The main interfaces are FTA (files transfer automated, not FTP) and MQSA, a WebSphere MQ interface[1].

The Alliance Workstation (SAW) is the desktop software for administration, monitoring and FIN message creation. Since Alliance Access is not yet capable of creating MX messages, Alliance Messenger (SAM) has to be used for this purpose. Alliance Web Platform (SWP) as new thin-client desktop interface provided as an alternative to existing Alliance WebStation, Alliance Workstation (soon)

already rejected the deal, citing legal reservations. In March 2011, it was reported that two mechanisms of data protection had failed. EUROPOL released a report complaining that requests for information from the US had been too vague (making it impossible to make judgments on validity) and that the guaranteed right for European citizens to know whether their information had been accessed by US authorities had not been put into practice.

U.S. control over transactions within the EU

On 26 February 2012 the Danish newspaper Berlingske reported that US authorities have sufficient control over SWIFT to seize money being transferred between two European Union (EU) countries (Denmark and Germany), since they succeeded in seizing around $26,000 that was being transferred from a Danish businessman to a German bank[6][3]. The transaction was automatically routed through the US, possibly because of the USD currency used in the transaction, which is how the United States was able to seize the funds. The money was a payment for a batch of Cuban cigars previously imported to Germany by a German supplier. As justification for the seizure, the U.S. Treasury stated that the Danish businessman had violated the United States embargo against Cuba.

Security

In 2016 an $81 million theft from the Bangladesh central bank via its account at the New York Federal Reserve Bank was traced to hacker penetration of SWIFT's Alliance Access software, according to a New York Times report. It was not the first such attempt, the society acknowledged, and the security of the transfer system was undergoing new examination accordingly. Soon after the reports of the theft from the Bangladesh central bank, a second, apparently related, attack was reported to have occurred on a commercial bank in Vietnam. Both attacks involved malware written to both issue unauthorized SWIFT messages and to conceal that the messages had been sent. After the malware sent the SWIFT messages that stole the funds, it deleted the database record of the transfers then took further steps to prevent confirmation messages from revealing the theft. In the Bangladeshi case, the confirmation messages would have appeared on a paper report; the malware altered the paper reports when they were sent to the printer. In the second case, the bank used a PDF report; the malware altered the PDF viewer to hide the transfers.

In May 2016, Banco del Austro (BDA) in Ecuador sued Wells Fargo after Wells Fargo honored $12 million in fund transfer requests that had been placed by thieves. In this case, the thieves sent SWIFT messages that resembled recently canceled transfer requests from BDA, with slightly altered amounts; the reports do not detail how the thieves gained access to send the SWIFT messages. BDA asserts that Wells Fargo should have detected the suspicious SWIFT messages, which were placed outside of normal BDA working hours and were of an unusual size[5]. Wells Fargo claims that BDA is responsible for the loss, as the thieves gained access to the legitimate SWIFT credentials of a BDA employee and sent fully authenticated SWIFT messages. In the first half of 2016, an anonymous Ukrainian bank and others—even "dozens" that are not being made public—were variously reported to have been "compromised" through the SWIFT network and to have lost money. In March 2022, Swiss newspaper NeueZürcherZeitung reported about the increased security precautions by the State Police of Thurgau at the SWIFT data center in Diessenhofen. After most of the Russian banks have been excluded from the private payment system, the risk of sabotage was considered higher. Inhabitants of the town described the large complex as a "fortress" or "prison" where frequent security check of the fenced property are conducted.

and Alliance Messenger. Alliance Integrator built on Oracle's Java Caps which enables customer's back office applications to connect to Alliance Access or Alliance Entry. Alliance Lite2 is a secure and reliable, cloud-based way to connect to the SWIFT network which is a light version of Alliance Access specifically targeting customers with low volume of traffic.

Services

There are four key areas that SWIFT services fall under in the financial marketplace: securities, treasury & derivatives, trade services. And payments-and-cash management.

SWIFTREF

Swift Ref, the global payment reference data utility, is SWIFT's unique reference data service. Swift Ref sources data direct from data originators, including central banks, code issuers and banks making it easy for issuers and originators to maintain data regularly and thoroughly. SWIFTRef constantly validates and cross-checks data across the different data sets.

SWIFTNet Mail

SWIFT offers a secure person-to-person messaging service, SWIFTNet Mail, which went live on 16 May 2007. SWIFT clients can configure their existing email infrastructure to pass email messages through the highly secure and reliable SWIFTNet network instead of the open Internet. SWIFTNet Mail is intended for the secure transfer of sensitive business documents,such as invoices, contracts and signatories, and is designed to replace existing telex and courier services, as well as the transmission of security-sensitive data over the open Internet. Seven f inancial institutions, including HSBC, FirstRand Bank, Clearstream, DnB NOR, Nedbank, and Standard Bank of South Africa, as well as SWIFT piloted the service.

U.S. government involvement

Terrorist Finance Tracking Program

A series of articles published on 23 June 2006 in The New York Times, The Wall Street Journal, and the Los Angeles Times revealed a program, named the Terrorist Finance Tracking Program, which the US Treasury Department, Central Intelligence Agency (CIA), and other United States governmental agencies initiated after the 11 September attacks to gain access to the SWIFT transaction database.[7] After the publication of these articles, SWIFT quickly came under pressure for compromising the data privacy of its customers by allowing governments to gain access to sensitive personal information. In September 2006, the Belgian government declared that these SWIFT dealings with American governmental authorities were a breach of Belgian and European privacy laws. In response, and to satisfy members' concerns about privacy, SWIFT began a process of improving its architecture by implementing a distributed architecture with a two-zone model for storing messages (see Operations centers). Concurrently, the European Union negotiated an agreement with the United States government to permit the transfer of intra-EU SWIFT transaction information to the United States under certain circumstances. Because of concerns about its potential contents, the European Parliament adopted a position statement in September 2009, demanding to see the full text of the agreement and asking that it be fully compliant with EU privacy legislation, with oversight mechanisms emplaced to ensure that all data requests were handled appropriately. An interim agreement was signed without European Parliamentary approval by the European Council on 30 November 2009, the day before the Lisbon Treaty—which would have prohibited such an agreement from being signed under the terms of the codecision procedure—formally came into effect. While the interim agreement was scheduled to come into effect on 1 January 2010, the text of the agreement was classified as "EU Restricted" until translations could be provided in all EU languages and published on 25 January 2010.

On 11 February 2010, the European Parliament decided to reject the interim agreement between the EU and the US by 378 to 196 votes. One week earlier, the parliament's civil liberties committee had

References

1. https://kbopub.economie.fgov.be/kbopub/toonondernemingps.html?lang=en&ond)
2. Scott, Susan V.; Zachariadis, Markos (2014). The Society for Worldwide Interbank Financial
3. Scott &Zachariadis 2014, p. 33.
4. Scott &Zachariadis 2014, p. 35.
5. Kowsmann, Patricia; Talley, Ian (26 February 2022). "What Is Swift and Why Is It Being Used to Sanction
6. Russia?" (https://www.wsj.com/articles/swift-banking
7. . Scott &Zachariadis 2014, p. 1-2.
8. Scott &Zachariadis 2014, p. 1-2, 35.
9. Scott &Zachariadis 2014, p. 36.
10. International banking giant refuses to cut off Israel, despite boycott calls (http://www.haaretz.com/busiNess/.premium-1.619514) . Haaretz. 7 October 2014.

Shri Shivaji Sci. & Arts College Chikhli, Dist. Buldana

Dr. Omraj S. Deshmukh
Principal
Shri Shivaji Sci. & Arts
College. Chikhli, Dist. Buldana