ASIAN COLLEGE OF HIGHER STUDIES (ACHS)

Tribhuvan University

Institute of Science and Technology

AN INTERNSHIP REPORT

ON

"SDGs Dashboard"

At Volunteers Initiative Nepal

Submitted to

Institute of Science and Technology

Tribhuvan University

In Partial Fulfillment of the Requirement for the

Bachelor's Degree in computer science and Information Technology

Diwash Shrestha (7773/072)

Registration No.: 5-2-1177-0013-2015

ASIAN COLLEGE OF HIGHER STUDIES (ACHS)

Tribhuvan University

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MENTOR'S RECOMMENDATION

I hereby recommend that this internship report prepared under my mentorship by Diwash Shrestha (5-2-1177-0013-2015) entitled "**SDGs Dashboard**" in partial fulfillment of this requirement for the degree of B. Sc. In Computer Science and Information Technology (B. Sc. CSIT) be processed for evaluation.

……

Ms. Mibis Shrestha

Volunteers Intiative Nepal

Nayabazaar Khusibu, Kathmandu

SUPERVISOR'S RECOMMENDATION

I hereby recommend that this internship report prepared under my supervision by Diwash Shrestha (5-2-1177-0013-2015) entitled "SDGs Dashboard" in partial fulfillment of this requirement for the degree of B. Sc. In Computer Science and Information Technology (B. Sc. CSIT) be processed for evaluation.

……

Mr. Deepesh Rahut

Asian College of Higher Studies

Dhobidhara, Kathmandu

LETTER OF APPROVAL

This is to certify that this internship report prepared by Diwash Shrestha [5-2-1177-0013-2015], entitled "SDGs Dashboard" in partial fulfillment of the requirement for the degree of B. Sc. In Computer Science and Information Technology (B. Sc. CSIT) has been well studied. In our opinion, it is satisfactory in the scope and quality for the required degree.

Signature of Supervisor …… Mr. Dipesh Rahut Asian College of Higher Studies	**Signature of Mentor** ……..…… Ms. Mibis Shrestha Volunteers Intiative Nepal
Signature of HOD/ Coordinator ……..…… Mr. Brihat Boswa / Coordinator Asian College of Higher Studies	**Signature of External Examiner** ……..…… External Examiner IOST, Tribhuvan University

ACKNOWLEDGEMENT

The internship opportunity I had with Volunteer Initiative Nepal was a great chance for learning and professional development. Therefore, I consider myself as a very lucky individual as I was provided with an opportunity to be a part of it. I am also grateful for having a chance to meet so many wonderful people and professionals who led me though this internship period.

Bearing in mind previous I am using this opportunity to express my deepest gratitude and special thanks to the **Dr. Laxmi Prasad Ghimire**, Program Manager of VIN who despite being extraordinarily busy with his duties, took time out to hear, guide and keep me on the correct path and allowing me to carry out my project at their esteemed organization and extending during the training.

I express my deepest thanks to Mr. **Mibis Shrestha**, Webmaster for taking part in useful decision giving necessary advices and guidance and arranged all facilities to make life easier. I choose this moment to acknowledge his contribution gratefully.

Moreover, I must show my gratitude to my coordinator **Mr. Dipesh Rahut** for his intense support and guidance for making this report. I perceive as this opportunity as a big milestone in my career development. I will strive to use gained skills and knowledge in the best possible way, and I will continue to work on their improvement, in order to attain desired career objectives.

My special thanks to **Mr. Brihat Boswa** for the constant guidance towards preparing this report standard as per the norms and values.

Finally, my thanks and appreciations go to each and every one of my colleagues who irrespective of the situation, always encouraged and supported me to prepare this report.

Sincerely,

Diwash Shrestha

ABSTRACT

This report is based on the professional experiences I gained during the internship period at Volunteers Initiative Nepal, a Non-for-profit, non-governmental organization. The author was involved in the Data Analysis of the organization data and creation of the Sustainable Development Goals dashboard. The challenges were to extract data from multiple sources like pdf, Docx, ppt _les etc. and store them in managed and tidy forms. In this report, I mainly have incorporated my experience at Volunteers Initiative Nepal especially in data analysis, dashboard development. I worked with team to analyses the sustainable goals data and create dashboard for the SDGs insights. The data analysis and Dashboard creation was done using Technologies like R, HTML, CSS, JavaScript, tidyverse,shiny,highcharter.

Keywords: R, Shiny,Dashboard HTML, CSS, JavaScript, GitHub

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List of Abbreviations

UI	User Interface
HTML	Hypertext Markup Language
CSS	Cascading Style Sheet
JS	JavaScript
BSc. CSIT	Bachelor of Science in Computer Science and Information Technology
IT	Information Technology
DOM	Document Object Model
SDGs	Sustainable Development Goals

Chapter 1

Introduction

1.1 Introduction

As per the requirement of the TU for the BSc. CSIT final year students are required to complete a six credit (minimum ten weeks/180 hour long) internship as a part of the course requirement. Industry is a crucial requirement of the internship course and this will have to be secured before getting started with the course. The internship in specialized field provides students in-depth understanding about the field, market exposure, and help to identify the potential career opportunities. Internship project is good for students to understand real world implications of the sound academic knowledge gained in college. [1] The internship gives the real world exposure to the professional life and show wider exploration of the career opportunities in information technology and software development. The internship experience is expected to enable the students to assist in the resolution of complex problem associated with database systems. The broad objectives of internship are as follows:

- To test the interest in particular field before permanent commitment are made.
- To develop skills in the application of theory to practical work situations.
- To test the aptitude for a particular career.
- To know the value of time management and interpersonal skills.
- To develop skills and techniques directly applicable to the careers.
- To acquire in-depth knowledge of the formal functional activities of a participating organization.

1.2 Purpose

In modern era , every organization has a collection of data that may be stored in different types of forms. Data Analysis is a process of inspecting, cleaning, transforming and modeling data with the goal of discovering useful information, informing conclusion and supporting decision making. Data Analysis can help a organization to learn about the past and plan for feature by extracting meaningful information from the data.

1.3 Objectives

The main objective of the internship project in simple term is to get practical experience of the theoretical knowledge gained in the classroom. The main task is to get enrolled into the organization and do tasks as required by the organization as well as the course of study i.e. BSc.CSIT. The internship attachment project is a

remarkable opening to experience the real world working environment and culture where the knowledge learned during BSc.CSIT course might be implemented. The following are the main objectives of the internship involved:

- To learn practical data analysis
- To experience the real-world organization environment
- To extract data from source and manage the data
- To use the analytic knowledge and find insights from the data
- To create interactive visualization for the website

1.4 Responsibilities Assigned

The principal responsibility assigned by the company was to extract data about organization from different sources and analyse the collected data using different tools and create report. Some of the responsibilities that I was assigned were:

- To extract the data from different source like pdf,docx etc .
- To analyze the collected data and create reports
- To create interactive visualization for the VIN website

1.5 Motivation

Currently, Information Technology is growing rapidly. World Wide Web o the Web is of the best inventions derived from it. The Web is currently treated as a huge source of information that anyone has access to in the form of web pages. While these web pages are common, good webpage is accessible by any form of device and have a relatively short load time.

HTML and CSS are easy languages that developers use to code webpages using easy implementation of tags and style properties. As web is the most popular platform for business and individuals to host their services on the biggest network in the world, HTML and CSS are self-promoted and used by many developers. Also, JavaScript is advantageous in interactivity, mostly client-side. User does not have to request to server again and again to process the services in the webpage.

1.5 Organizational Overview

Volunteers Initiative Nepal (VIN), established in 2005 by a diverse group drawn from development workers, educationalists, social activists and other professionals, is a non-religious, non-political, non-for-profit, and non-governmental organization (NGO). VIN has been officially registered under the Society Act with the District

Administration Office, Kathmandu (Reg. No. 147/062/63), and affiliated with the Social Welfare Council Nepal (SWC) (Affiliation No.20910). VIN focuses on community-based projects involving local volunteers backed-up by international volunteers in Nepal.

VIN has been mobilizing local and international volunteers in various development sectors including educational programs, trainings and counseling that significantly contribute to enhance the livelihoods of poor and marginalized communities in Nepal. VIN has also been deploying its volunteers in teaching, teacher training, environment, health and sanitation, helping children in orphanage, women empowerment support, youth empowerment and entrepreneurship development.

This organization's mission is to empower marginalized communities through equitable, inclusive and holistic development programs with a vision "Peaceful, Prosperous and Equitable society throughout Nepal."

1.5.1 Contact Information

Volunteers Initiative Nepal

Nayabazaar Khusibu

Kathmandu,Nepal

Tel: 01-4356679

Email: support@volunteeringnepal.org

website: https://www.volunteersinitiativenepal.org/

1.6 Motivation

1.6.1 Motivation for choosing Volunteers Initiative Nepal

It is very important to select organization that fulfills our objectives. As it is for our internship, it is necessary to select organization where there is learning environment because as an intern our first motive is to learn how the works are carried out in the real field. The four-year degree of BSc. CSIT allows us to attain knowledge on various aspects of Information Technology. At the same time the internship is the one of the major highlights of the program to expose the students to the professional world. Among the various criteria and sectors provided to us in internship prerequisite statement, Non-Governmental Organization was chosen to do Data Analysis. Various organizations were shortlisted and approached out of which the organization with the best lucrative offer and environment was selected. Volunteers Initiative Nepal which is located Nayabazaar Khusibu, Kathmandu, an NGO organization that works on Empowering marginalized communities through equitable, inclusive and holistic development programs. The organization helped me gain wide experience by getting me involved in their projects.

1.6.2 Motivation for choosing Data Analysis with R

Data Analysis is a process of inspecting, cleaning, transforming and modeling data with the goal of discovering useful information. In todays era of mobiles and internet every organization has huge amount of data. These Data can be used to find useful insights using analysis methods. R is a open source programming language specially used for statistics and data analysis. It has built in support for multiple algorithms and methods used in data analysis. It used by data analyst and data scientist to analyze huge amount of data and create reports, dashboard using R .There are lots of other tools and language which can be used for data analysis but among them R is the one that has huge collection of packages , easy to use and powerful.

1.7 Duration

Start Date	November 15 , 2019
End Date	February 15, 2020
Total Duration	3 Months
Position	Internship
Working Days	6 days a week
Supervisor	Mr. Mibis Shrestha
Office Hours	10:00 AM – 5:00 PM

Chapter 2

Literature Review

2.1 Sustainable Development Goals

The Sustainable Development Goals (SDGs) are a collection of 17 global goals designed to be a “blueprint to achieve a better ad mire sustainable future for all”. The SDGs were set in 2015 by the United Nations General Assembly and Intended to be achieved by the year 2030 are part of UN Resolution 70/1, the 2030 Agenda . At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

2.1 Dashboard

An information dashboard is a visual display of the most important information needed to achieve certain objectives, that has been consolidated into a single screen so it can be monitored at a glance .The term “dashboard” originates from the automobile dashboard where drivers monitor at-a-glance the major functions of their vehicle via a cluster of instruments. A dashboard is a form of delivering a progress report. Sometimes also referred to or known as management dashboard or business intelligence dashboard, they are data visualization tools that display status of metrics and key performance indicators (KPIs) for a country, an organization or a project. Dashboard can also be used in development agendas to show insights or information about the situation of the Human Development indicators. Dashboard can make it easy to navigate the already available database about the SDG which are cumbersome . Dashboard can be used to create awareness about the different SDGs as it makes it easy to understand the information.

Chapter 3

System Analysis

Generally, System development comprises of two major phases: System Analysis and System Design. In System Analysis, the details of the existing system or proposed one is understood and decided whether proposed system is desirable or not and decided whether the existing system needs improvements. System analysis helps to understand the proposed system architecture, working and goals. Thus, System Analysis can be summarized as the process of investigating a system, identifying problems and using the gathered information to improve existing system or develop the proposed one.

3.1 System Requirements

The system requirement is a collection of descriptions about the product and its output in terms of functional and non-functional requirements. It describes how a system reacts to the interaction with the users and what type of result it produces along with the performance of the system.

3.1.1 Functional Requirement

A Functional Requirement is a description of the service that the software must offer. It describes a software system or its component. A function is nothing but inputs to the software system, its behavior, and outputs. It can be a calculation, data manipulation, business process, user interaction, or any other specific functionality which defines what function a system is likely to perform.

Some of the functional requirements of the system under development can be described as follows in bullet points.

- System should be able to show the choropleth maps based on the SDGs goal
- System should be able to process the user input and output insights
- System should be able to give the SDGs goals type
- System should show the interactive charts
- All the buttons, menus and links must be clickable and result to the desired function.

3.1.2 Non-Functional Requirement

A Non-Functional Requirement defines the quality attribute of a software system. They judge the software system based on Responsiveness, Usability, Security, Portability and other non-functional standards that are critical to success of the software system. The nonfunctional requirements ensure the software system follow legal and compliance rules. They ensure the reliability, availability, and performance of the software system. They ensure good user experience and ease of operating the software.

Talking about the non-functional requirement, website or system must be available to the users all the time i.e. 24/7, easy to use and informative. The system should be responsive and accessed as quick as possible after the request sent by the user to the server through web browser.

3.2 Feasibility Analysis

A feasibility analysis is used to determine the viability of an idea, such as ensuring a project is legally and technically feasible as well as economically justifiable. It tells us whether a project is worth the investment. A feasibility analysis evaluates the project's potential for success. Feasibility of the project completed in my internship program is described in following categories.

3.2.1 Technical Feasibility

Technical feasibility involves evaluation of the hardware and the software requirements of the proposed system. This application is developed using RStudio IDE, Shiny, and excel for data. Google Chrome and Mozilla Firefox are used to run the application for facilitating user interface. So, this system is technically feasible. All the necessary hardware and software required for developing and installing the system are available.

3.2.2 Operational feasibility

Operational feasibility is dependent on human resources available for the project and involves projecting whether the system will be used if it is developed and implemented.

With highly interactive, easy to use feature and informative system, it will not be an issue to learn to use the system. Basic Knowledge of Computer System can be handy to use the system and understand the functionality.

3.2.3 Economic Feasibility

Economic feasibility deals with the degree to which the economic advantages of something to be made, done, or achieved are greater than the economic costs. So, we performed economic feasibility of the system to determine if it was alright to invest the amount of economic resource and the amount of income the company would generate and benefit from the profit. Since the system is made with low cost and is part of one of the NGO work and ease of access, we realize that our system is economically feasible.

3.3 Technical Requirements

3.3.1 Hardware Requirements

Since, the system developed is a web-based system and is accessible through the application which is used to browse web content i.e. web browser, the hardware requirement is minimum. The devices that is able to run web browsers like safari, google chrome, internet explorer and so forth are eligible to run the system. Such devices can be a laptop, desktop computer, mobile devices and tablets.

3.3.2 Software Requirement

Platform:	Windows / Linux / Android
Programming Language:	R
Front End:	HTML/CSS/Bootstrap
Back End:	Excel, Shiny
Version Control:	Git/GitHub

Chapter 4

System Design

Systems design is the process of defining elements of a system like modules, architecture, components and their interfaces and data for a system based on the specified requirements.

4.1 High Level Design

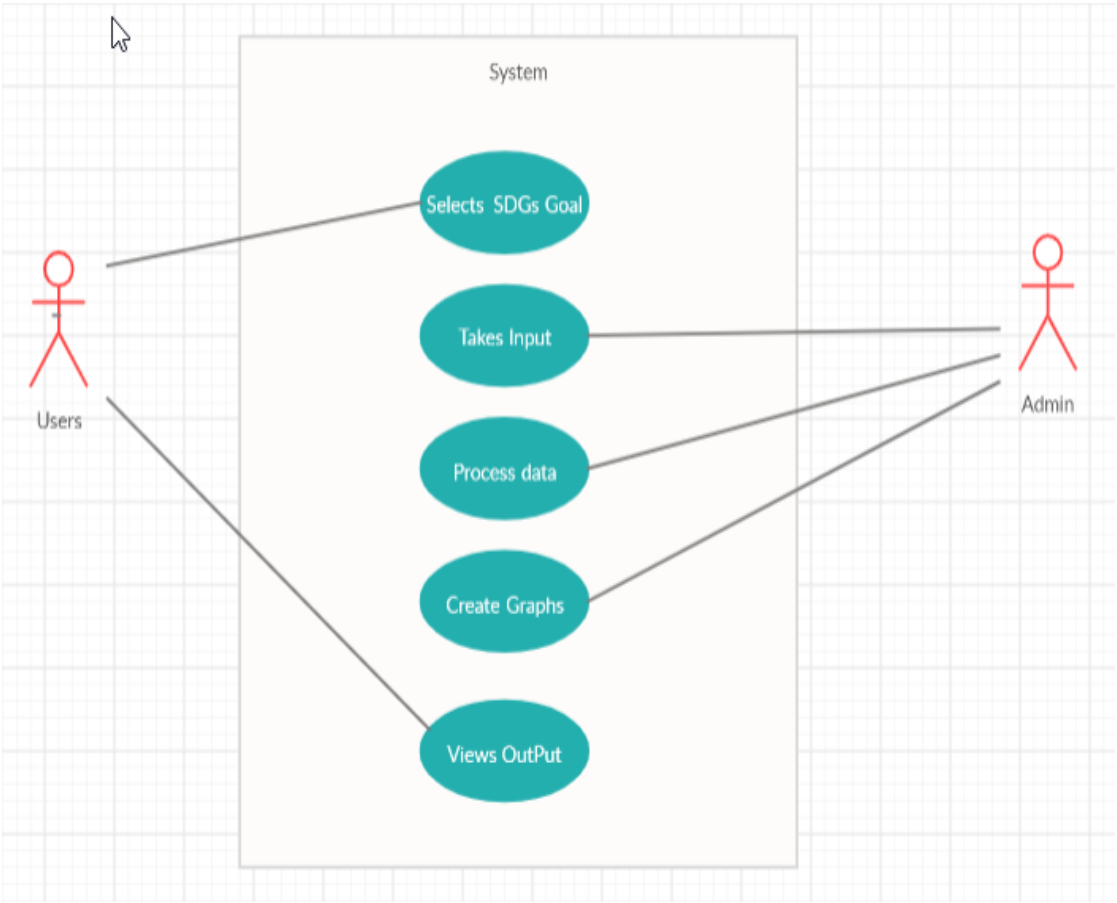
High Level Design explains the complete architecture of the software or system that is going to be developed. It tells about logical designs as well as physical implementation of the design. Architecture used to design the system gives us an overview of the entire system, identifying the main components that would be developed for the product and their interfaces. At initial phases of the design different components of the system that can be the part of the system are identified and in later part of the design , these components are bought together to fit in in the system as a whole and work together to function a particular purpose.

The main focus sits at the Conceptual and Logical levels of abstraction for a project. And the stress should be all on diagrams and description of the system components.

4.1.1 Use Case Diagram

A Use Case diagram at its simplest is a representation of a user's interaction with the system that shows the relationship between the user and the different use cases in which the user is involved. A use case diagram can identify the different types of users of a system and the different use cases and will often be accompanied by the other types of diagrams as well. The use cases are represented by either circles or ellipses.

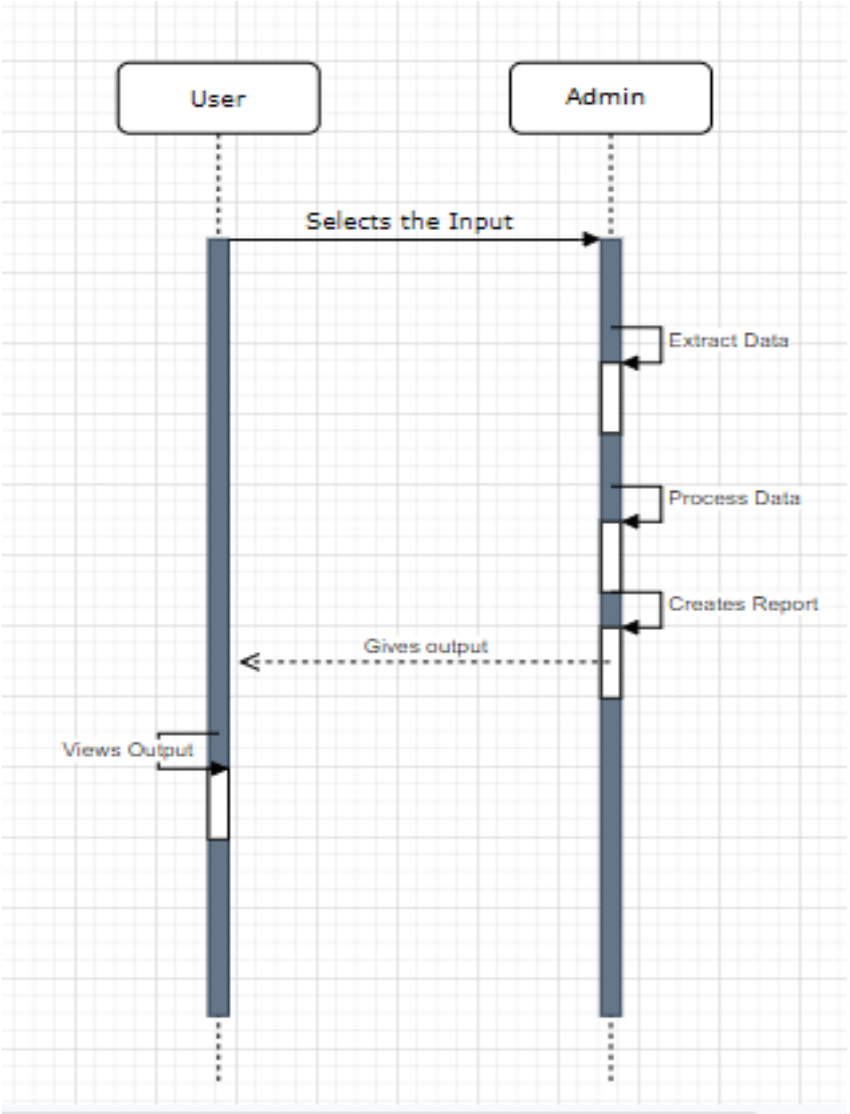
During the development of SDG Dashboard, I have used following diagrams for understanding the requirements and control structure of the system.



Use Case Diagram

4.1.2 Sequence Diagram

A sequence diagram shows object interactions arranged in time sequence. It depicts the objects and classes involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of the scenario . Sequence diagrams are typically associated with use case realizations in the Logical View of the system under development.



Sequence Diagram

Chapter 5

Implementation and Testing

The logical design of the system had to be built in the physical working system in the implementation phase. HTML, CSS, Bootstrap, highcharter are used for the front design of the system where as the R and Shiny used for the analysis and programming part of the application.

5.1 Tools Used

5.1.1 HTML

HTML or the Hypertext Markup Language, is the standard markup language used to create the web pages. HTML tags mostly come in pairs consisting of the start tag () and the end tag () within the angle brackets. HTML documents are read by the web browsers and are composed into audible or visible web pages. The browser does not display the HTML tags but used the tags to interpret the contents of the pages. It forms the building blocks for all the websites.

In this project , the HTML is used to create the ui layout of the application. It is used to create the SDGs goal bottons which are used to take input.

5.1.2 CSS

Cascading Style Sheet (CSS) is a style sheet language that is used to format the layout of the web pages. CSS separates the document contents written in HTML or similar markup languages from the document presentation including elements such as color, font, layouts, etc. Such separation of documents provides more flexibility and control in the specification of the presentation and improve content accessibility. Multiple style sheets can also be imported. In this project, the navigation, header , buttons and body sections are given the custom designs using different CSS class and its properties.

5.1.3 R

R is a programming language and free software environment for statistical computing and graphics supported by the R Foundation for Statistical Computing. The R

language is widely used among statisticians and data miners for developing statistical software[7] and data analysis. R and its libraries implement a wide variety of statistical and graphical techniques, including linear and nonlinear modeling, classical statistical tests, time-series analysis, classification, clustering, and others.In this project R is used to extract data, analyse the data, create interactive visualization and web application using different packages.

5.1.4 Shiny Web Framework

Shiny is an R package that makes it easy to build interactive web apps straight from R. We can host standalone apps on a webpage or embed them in R Markdown documents or build dashboards. We can also extend your Shiny apps with CSS themes, htmlwidgets, and JavaScript actions. Shiny is used to create the dashboard where we can visualize the SDGs data.

5.1.5 Highcharter

Highcharter is R wrapper for highcharts which creates interactive charts for web site and web application using R code. It is used to create the graphs in the dashboard.

5.1.6 R Studio

RStudio is an integrated development environment (IDE) for R. It includes a console, syntax-highlighting editor that supports direct code execution, as well as tools for plotting, history, debugging and workspace management.
R Studio is used as IDE for developing entire project.

5.1.7 Git/GitHub

Git is a free and open source version controlling tool which is used for tracking changes in the computer files and coordinating work on those files among multiple people.

GitHub is a web-based hosting service for version control using git. It supports every feature of git and has also its own features.

5.2 Development Methodology

Waterfall model is followed for developing the system. The different phases that are required in this development methodology are requirement analysis, system design, implementation, testing, development and maintenance. The Project Manager and senior developers analyze all the functional and non-functional requirement of the system that needs to be developed. Knowing the requirements for the system we get a clear understanding and view about what the system is supposed to be. After knowing the requirements for the system, now we define the overall architecture of the system through designs like, Use Case, Sequence Diagram, etc. R Shiny framework is used for the implementation and testing of the system and for the data storage Excel is used.

5.3Source Code

Screenshots of codes are shown below.

```
library(ggplot2)
library(readxl)
library(dplyr)
library(highcharter)
library(RColorBrewer)
library(shinycssloaders)
library(DT)
library(shinydashboard)

SDG_Indicator <- read_excel("data/SDG_Indicator.xlsx")
sdgs_metadata1 <- read_excel("data/sdgs_metadata1.xlsx")
sdg_2019_index <- read_excel("data/2019GlobalIndexResults_modified.xlsx", sheet = "Overview")
sdg_2019_index1 <- read_excel("data/2019GlobalIndexResults_modified.xlsx", sheet = "Overview") %>%
sdg_2019_index2 <- read_excel("data/2019GlobalIndexResults_modified.xlsx", sheet = "SDR2019 Data")
data <- sdgs_metadata1
maps <- readRDS("map.rds")

# Map for the SDG Score
sdg_score_map <- highchart(type = "map") %>%
  hc_add_series_map(
    map = maps, df = select(sdg_2019_index, Country, Score, Rank),
    value = "Score", joinBy = c("name", "Country"),
    name = "SDG Global Score", borderColor = "#777"
  ) %>%
  hc_colorAxis(dataClasses = color_classes(c(0, 50, 60, 70, 80, 100),
    colors = c(brewer.pal(6, "Blues"))
  )) %>%
  hc_title(
    text = "<b>SDG Global Report 2019<b/>",
    margin = 20, align = "center",
    style = list(color = "black", useHTML = TRUE)
  ) %>%
  hc_tooltip(backgroundColor = "#FCFFC5", borderWidth = 2, valueDecimals = 2)
```

```r
# function for rendering the plots
hc_map_fun <- function(data, title, colorcode) {
  data <- data
  title <- title
  colorcode <- colorcode
  highchart(type = "map") %>%
    hc_plotOptions(map = list(
      borderColor = "#555", borderWidth = 0.5,
      allAreas = FALSE,
      joinBy = c("name", "country"),
      mapData = maps
    )) %>%
    hc_add_series_list(data) %>%
    hc_title(
      text = title,
      margin = 20, align = "center",
      style = list(color = colorcode, useHTML = TRUE)
    ) %>%
    hc_tooltip(pointFormat = "<b>{point.name}<b/><br/>{point.key}") %>%
    hc_legend(
      align = "center"
    ) %>%
    hc_add_theme(hc_theme_google())
}
```

```css
a#bs-select-1-0{
    color: #e5243b;
    font-family: Oswald,sans-serif;
    padding: 11px 16px;
    border: .5px solid gray;
    border-top: 1px solid gray;
}


a#bs-select-1-1{
    border: .5px solid gray;
    color:  #DDA63A;
    font-family: Oswald,sans-serif;
    padding: 11px 16px;
}

a#bs-select-1-2{
color: #4C9F38;
font-family: Oswald,sans-serif;
padding: 11px 16px;
border: .5px solid gray;
}

a#bs-select-1-3{
color: #C5192D;
font-family: Oswald,sans-serif;
padding: 11px 16px;
border: .5px solid gray;
}

a#bs-select-1-4{
color: #FF3A21;
font-family: Oswald,sans-serif;
padding: 11px 16px;
border: .5px solid gray;
}
```

```css
.navbar-default .navbar-nav>li>a {
    color: #444;
    border: 1px solid;
    border-collapse: separate;
    line-height: 22px;
    font-weight: 600;
    margin: 10px 10px 10px 10px;
    border-radius: 3px;
}


.dropdown-menu>.active>a, .dropdown-menu>.active>a:focus, .dropdown-menu>.active>a:hover {
background-color: unset;
}

.filter-option-inner-inner{
    font-family: oswald;
    line-height: 30px;
}


.navbar-brand{
    padding: 0px;
    margin-left: 15px;
    margin-right: 20px;
}

.container-fluid>.navbar-collapse, .container-fluid>.navbar-header, .container>.navbar-collapse, .container>.navbar-header{

}
```

```r
navbarPage(
  theme = "style.css",
  tags$img(src = "image/sdg_logo.png", height = "40px"),
  tabPanel(
    "Overview",
    # SDG overview Map
    withSpinner(highchartOutput("overviewmap", height = "600px")),
    tags$br(),

    # list of action button
    tags$div(
      class = "logo-div", style = "text-align:center; margin-bottom:5px;",
      tags$h3("Sustainable Development Goals"),
      tags$p("Select one of the 17 SDGs to see it on the map"),
      tags$button(
        id = "goal1",
        class = "btn action-button",
        style = "padding:0px; border: none;",
        tags$img(
          src = "image/SDG Icons 2019_WEB/E-WEB-Goal-01.png",
          height = "120px"
        )
      ),
      tags$button(
        id = "goal2",
        class = "btn action-button",
        style = "padding:0px; border: none;",
        tags$img(
          src = "image/SDG Icons 2019_WEB/E-WEB-Goal-02.png",
          height = "120px"
        )
      ),
```

5.3 Testing

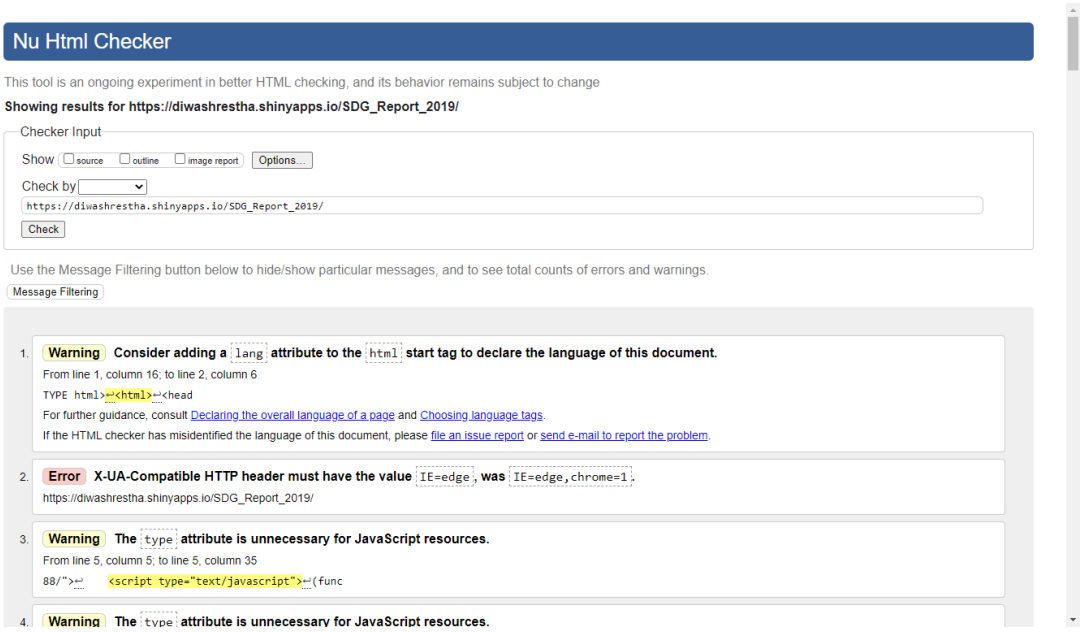
5.3.1 Unit Testing

Unit Testing concentrates on each unit of software as implemented in the source code. It only tests the functionality of the units themselves. A unit test targets a small unit of code. External dependencies should be removed from unit tests, e.g. by replacing the dependency with a test implementation or an object created by a test framework.

5.3.2 Validation Testing

When the project was completed, it was uploaded in shinyapps.io and hosted there to find the compatibility of the system while hosted on the server by different browsers. The browser used while testing the web application were Google Chrome and Microsoft Edge. While those testing visually were all completed lastly the project was to be verified and validated on internet standards. Therefore, the document was submitted to W3C Markup Validation Service to validate the webpage. The errors found in the program were eradicated and warnings were ignored as per judgement. Thus, the final product was approved to be used by all means.

Some of the warnings and errors found during validating the product are shown below as screenshots:



t>↩↩ <script type="text/javascript">↩

5. **Error** **CSS: Parse Error.**
   From line 97, column 68; to line 97, column 108
   `size: 8px}spinner-1deae5f1e0b833138fa3e096740996098</styl`

6. **Error** **CSS: Parse Error.**
   From line 99, column 68; to line 99, column 108
   `size: 8px}spinner-de27c575feced19e7bab3365c13227e58</styl`

7. **Warning** **The `type` attribute is unnecessary for JavaScript resources.**
   From line 108, column 1; to line 108, column 113
   `>↩↩<body>↩<script type="text/javascript" src="/__static__/components/iframe-resizer/js/iframeResizer.contentWindow.min.js"></scri`

8. **Warning** **The `type` attribute is unnecessary for JavaScript resources.**
   From line 109, column 1; to line 109, column 93
   `</script>↩<script type="text/javascript" src="/__static__/frontend/scripts/shinyapps.frame.content.js"></scri`

9. **Warning** **The `type` attribute is unnecessary for JavaScript resources.**
   From line 110, column 1; to line 110, column 79
   `</script>↩<script type="text/javascript" src="/__static__/frontend/scripts/shinyapps.js"></scri`

10. **Warning** **The `navigation` role is unnecessary for element `nav`.**
    From line 112, column 3; to line 112, column 73
    `cript>↩↩ <nav class="navbar navbar-default navbar-static-top" role="navigation">↩ <`

11. **Error** **Bad value `40px` for attribute `height` on element `img`: Expected a digit but saw `p` instead.**
    From line 116, column 11; to line 116, column 55
    `<img src="image/sdg_logo.png" height="40px"/>↩`

Chapter 6

Conclusion

6.1 Conclusion

An internship gives the opportunity to grab the professional experience. This internship program uplifted my skills and knowledge and gave me the opportunity to work in the professional team. Another major thing that I learned is time management and work management. With this internship opportunity, I have gained much more insight into the web development. This internship opportunity has helped me gain the practical knowledge required to implement the theoretical information obtained. I gain knowledge about the difference between the real-world scenario and the college level. The internship in Volunteers Initiative Nepal has provided a great opportunity to enhance knowledge and skills. It helped the author to gain the experience of working in the real and practical field and most importantly working in a team. Moreover, it presented an opportunity to work in the project related to author interest and specialization. The main objective of the internship is learning the things that is necessary to get yourself into the real field of work. This internship has enhanced author knowledge and skills. It has given the author the opportunity to understand this industry and how the work is actually done.

6.2 Lessons Learned

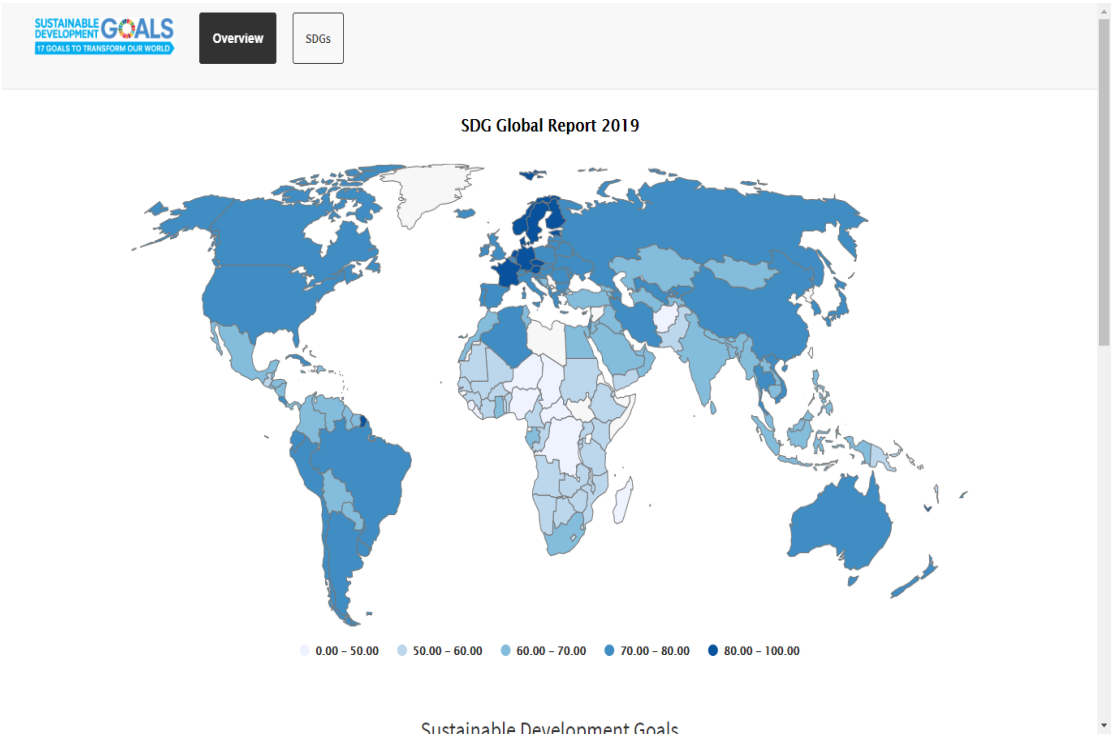
Through the internship from Volunteers Initiative Nepal the lessons learnt were:

- Importance of time management and working in team
- Understanding the differences between theoretical and practical knowledge.
- Working in team with coordination and cooperation to make quality decisions.
- Working as software developer can be considered as a potential career
- Understanding the Use of IT in NGO

References

1. (n.d.). Retrieved from India SDG Dashboard: http://www.sdgindia2030.mospi.gov.in/
2. B.Hughes, M. (n.d.). *Software Project Management 4th.Edition.*
3. Nations, U. (n.d.). *#Envision2030*. Retrieved from https://www.un.org/development/desa/disabilities/envision2030.html
4. Steve Wexler, J. S. (2017). *The Big Book of Dashboards: Visualizing Your Data Using Real-World Business Scenarios.* Wiley.
5. *Sustainable Development Goals*. (n.d.). Retrieved from Wikipedia: https://en.wikipedia.org/wiki/Sustainable_Development_Goals

APPENDICES



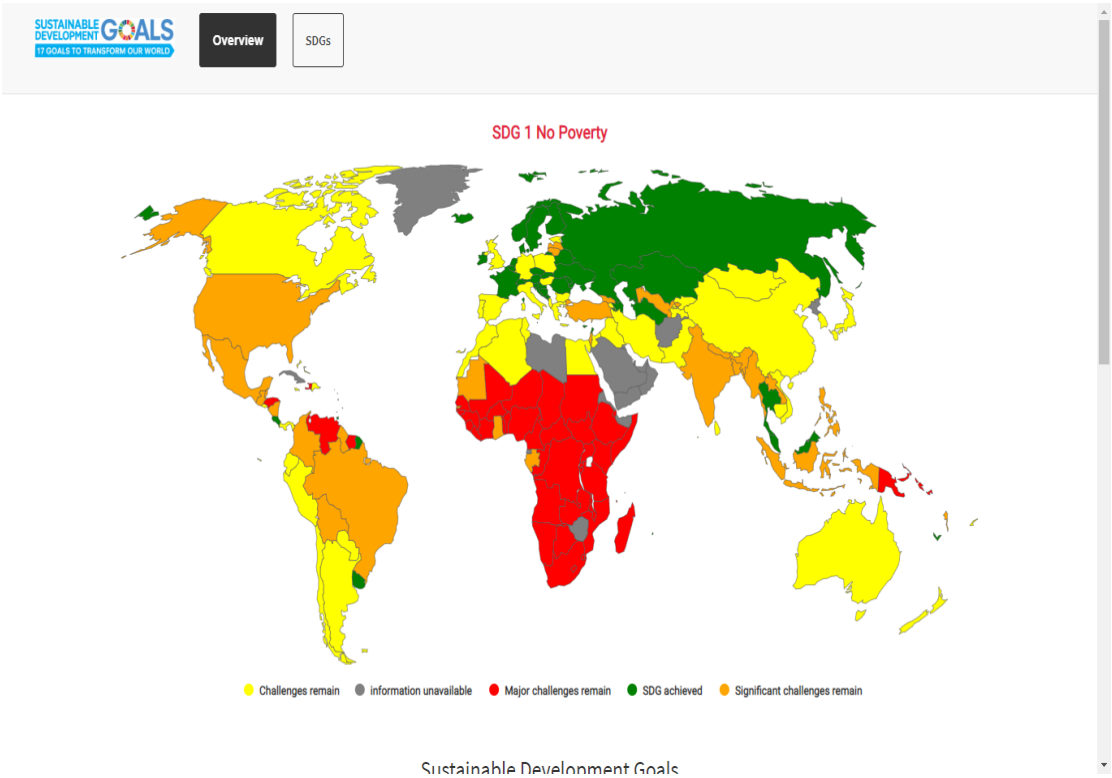
Home Page of Dashboard

The SDG Index

Show 10 entries Search:

	Country	Rank	Score
1	Denmark	1	85.22
2	Sweden	2	84.99
3	Finland	3	82.82
4	France	4	81.49
5	Austria	5	81.07
6	Germany	6	81.07

SDGs Goal Select



Output 1

The SDG Index

Show 10 entries Search:

	Country	Score	Global Rank	Population	GDP per capita	Goal 1 Score	Goal 1 Dashboard
1	Afghanistan	49.65	153	37,209,007.00	1,796.39		information unavailable
2	Albania	70.27	60	2,938,428.00	11,802.02	96.85	Challenges remain
3	Algeria	71.10	53	42,679,018.00	13,900.16	97.84	Challenges remain
4	Andorra			77,072.00			information unavailable
5	Angola	51.32	149	31,787,566.00	6,051.58	45.16	Major challenges remain
6	Antigua and Barbuda			104,084.00	21,380.16		information unavailable
7	Argentina	72.35	45	45,101,781.00	18,932.17	97.03	Challenges remain
8	Armenia	68.77	75	2,936,706.00	8,787.58	91.21	Challenges remain
9	Australia	73.89	38	25,088,636.00	44,648.71	99.03	Challenges remain
10	Austria	81.07	5	8,766,201.00	45,436.69	99.19	SDG achieved

Previous 1 2 3 4 5 … 18 Next

Output 2

SUSTAINABLE DEVELOPMENT GOALS
17 GOALS TO TRANSFORM OUR WORLD

Overview | SDGs

GOAL

1. No Poverty

More than 700 million people, or 10% of the world population, still live in extreme poverty and is struggling to fulfil the most basic needs like health, education, and access to water and sanitation, to name a few. The majority of people living on less than $1.90 a day live in sub-Saharan Africa. Worldwide, the poverty rate in rural areas is 17.2 percent more than three times higher than in urban areas.Having a job does not guarantee a decent living. In fact, 8 per cent of employed workers and their families worldwide lived in extreme poverty in 2018. Poverty affects children disproportionately.One out of five children live in extreme poverty. Ensuring social protection for all children and other vulnerable groups is critical to reduce poverty.Poverty has

Current Rating

20 SDG achieved	20 Challenges remain
20 Significant challenges remain	20 Major challenges remain
20 [information unavailable	

SDGs Targets

1.1	By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day
1.2	By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions
1.3	Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable
	By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as

SUSTAINABLE DEVELOPMENT GOALS
17 GOALS TO TRANSFORM OUR WORLD

Overview | SDGs

GOAL

5. Gender Equality

While the world has achieved progress towards gender equality and women's empowerment under the Millennium Development Goals (including equal access to primary education between girls and boys), women and girls continue to suffer discrimination and violence in every part of the world.Gender equality is not only a fundamental human right, but a necessary foundation for a peaceful, prosperous and sustainable world. Unfortunately, at the current time, 1 in 5 women and girls between the ages of 15-49 have reported experiencing physical or sexual violence by an intimate partner within a 12-month period and 49 countries currently have no laws protecting women from domestic violence. Progress is occurring regarding harmful practices such

Current Rating

20 SDG achieved	20 Challenges remain
20 Significant challenges remain	20 Major challenges remain
20 [information unavailable	

SDGs Targets

5.1	End all forms of discrimination against all women and girls everywhere
5.2	Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation
5.3	Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation
5.4	Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate