Project Specification_Intial Project Plan_Nipesh.docx

by Nipesh Khanal

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BSc (Hons) Computing Course 2023/24

Level 6 Production Project

Name: Nipesh Khanal	**Student I.D.: 77356753**
Course: BSc (Hons) Computing	**Supervisor's Name:**

Final Project Individual Aim & Objectives

Title of my Project: Weather Monitoring System

Aim of my Project: The aim of my product is to keep track of weather elements that is temperature, rainfall, humidity and lights over internet, building it a great instance of IOT technology using Nodemcu and Blynk app.

Objectives of my Project:

- Develop and understand the basic concept of IoT Architecture.
- To Monitor real time weather data.
- To gain some knowledge on sensor integration and collection of data.
- Providing remote data access through the Blynk platform.
- To support environmental awareness and the aims of sustainable development.
- To innovate a price effective and scalable weather tracking system.
- To develop a user-friendly imaging and control.
- To understand the concept of microcontroller programming using Arduino IDE.
- To put in place effective data transmission protocols.
- Implementing efficient sensors integration.

Specification of my Product:

There are 2 categories in Specification of the project that is Functional Requirement and Nonfunctional Requirement which is described below with MoSCow Method.

Functional Requirements	**MoSCow**
Gathering Data In actual time.	M
Sending data to the cloud server through NodeMCU	M
Remote Observation with the blynk app	M
Data logging to save weather information locally or in the cloud	S
Graphics in the Blynk application	S
Different sensors like barometric pressure, wind speed etc.	C
Connectivity with virtual assistants such as Google Assistant and Alexa	C
Weather analysis powered by AI	W
A solar powered architecture	W

Non-Functional Requirements	**MoSCow**
Easy-to-use Blynk app with LCD user interface	M
Easy to use and user friendly	M
Product is excellent in performance with low latency	S
Product shall be Versatile to accommodate more sensors	S
Product shall be Portable and light in weight design	C
Product shall Be beautiful and eye-catching enclosure	C
Enterprise-level safety precautions such as authentication or encryption	W

Research:

Accumulate, evaluate, and exchange information in accurate time has been transformed by the incorporation of Internet of Things technology into environmental monitoring systems. According to (Gubbi et al. 2013), IoT has made systems adaptable, scalable, and economical than conventional weather monitoring techniques. IoT systems can monitor environmental parameters including temperature, humidity, and air pressure with great efficiency and precision by utilizing inexpensive microcontrollers and sensors (Perera et al., 2014).

For tracking the climate in real time, IoT-enabled weather monitoring systems are being used more and more. These systems measure important atmospheric factors using networked sensors and microcontrollers, sending the data to cloud platforms for remote access (Gubbi et al., 2013). IoT solutions are more affordable, scalable, and highly configurable than traditional systems (Perera et al., 2014).

By utilizing platforms like Blynk and inexpensive components like NodeMCU, this project seeks to overcome the drawbacks of traditional weather monitoring systems.

Evaluation:

The system developed using NodeMCU and the blynk app illustrate reliable and price effective IoT solutions for real time weather monitoring. It collects temperature, humidity, rainfall and transmit the data wirelessly to the app for easy watch. The app allows us to customize interface and set alerts. Totally, this project meets its objective, and the system runs well in a good environment, but it can be affected by extreme weather conditions.

Project Planning & Methodology

Planning of the Product:

ID	Task Mode	Task Name	Duration	Start	Finish
1		**1.Start Project**	98 days	Mon 12/16/24	Mon 4/28/25
2		**2. Project Initiation and specification submission**	**16 days**	**Mon 12/16/24**	**Mon 1/6/25**
3		2.1 Meeting with supervisor to finalize project scope.	6 days	Mon 12/16/24	Sat 12/21/24
4		2.2 Establishing the goals, deliverables, and scope of the project.	2 days	Mon 12/16/24	Tue 12/17/24
5		2.3 Carrying out a feasibility assessment and identifying potential risks.	2 days	Mon 12/16/24	Tue 12/17/24
6		2.4 Creating the risk registry and initial project definition.	3 days	Mon 12/16/24	Wed 12/18/24
7		2.5 Examining the project specification and submitting it	3 days	Mon 12/16/24	Wed 12/18/24
8		**3.Project Planning**	**7 days**	**Tue 1/7/25**	**Mon 1/13/25**
9		3.1 Making a thorough project plan that includes a timeframe and Gantt cha	2 days	Tue 1/7/25	Wed 1/8/25
10		3.2 Recognizing crucial pathways and important dependencies.	1 day	Thu 1/9/25	Thu 1/9/25
11		3.3 Discussing the strategy with the supervisor and revising it in light of comr	2 days	Fri 1/10/25	Sat 1/11/25
12		3.4 Completing and, if required, resubmitting the revised project plan.	2 days	Sun 1/12/25	Mon 1/13/25
13		**4. Research on Project**	**20 days**	**Tue 1/14/25**	**Mon 2/10/25**
14		4.1 Reviewing the research on relevant frameworks and systems.	5 days	Tue 1/14/25	Sun 1/19/25
15		4.2 Investigating possible system architectures and approaches.	6 days	Mon 1/20/25	Mon 1/27/25
16		4.3 Reading Google Scholars and watching videos	5 days	Tue 1/28/25	Mon 2/3/25
17		4.4 Submitting Ethical Consent Form	1 day	Tue 2/4/25	Tue 2/4/25
18		4.4 Finalizing the research results for the conclusion of the report.	5 days	Wed 2/5/25	Tue 2/11/25
19		**5.Training and Implementation Phase**	**31 days**	**Tue 2/11/25**	**Tue 3/25/25**
20		5.1 Adapting to essential technology and tools (Blynk, sensors, NodeMCU).	4 days	Wed 2/12/25	Mon 2/17/25
21		5.2 Creating sensor firmware and evaluating its primary features.	5 days	Tue 2/18/25	Mon 2/24/25
22		5.3 Setting up the information system, hardware, and integration of softwar	10 days	Tue 2/25/25	Mon 3/10/25
23		5.4 Setting up Blynk App and Uploading code to NodeMCU Board	1 day	Tue 3/11/25	Tue 3/11/25
24		5.5 Optimizing the system's dependability and performance.	10 days	Wed 3/12/25	Tue 3/25/25
25		**6. Testing**	**15 days**	**Wed 3/26/25**	**Tue 4/15/25**
26		6.1 Carrying out system and sensor functional testing.	4 days	Wed 3/26/25	Mon 3/31/25
27		6.2 Enhancing program performance and Solving minor issues	5 days	Tue 4/1/25	Mon 4/7/25
28		6.3 Executing user testing and final system checks.	6 days	Tue 4/8/25	Tue 4/15/25
29		**7. Final Report Preperation and Submission**	**9 days**	**Wed 4/16/25**	**Mon 4/28/25**
30		7.1 Reviewing and documenting the project's results.	3 days	Wed 4/16/25	Fri 4/18/25
31		17.2 Profeeding The report	3 days	Mon 4/21/25	Wed 4/23/25
32		17.3 Submitting the Final Report	3 days	Thu 4/24/25	Mon 4/28/25
33					
34					

Fig: - work sheet to illustrate drafting of the product.

Timeline: -

Figure: - The Above Timeline Illustrates the drafting of the project.

Gantt Chart: -

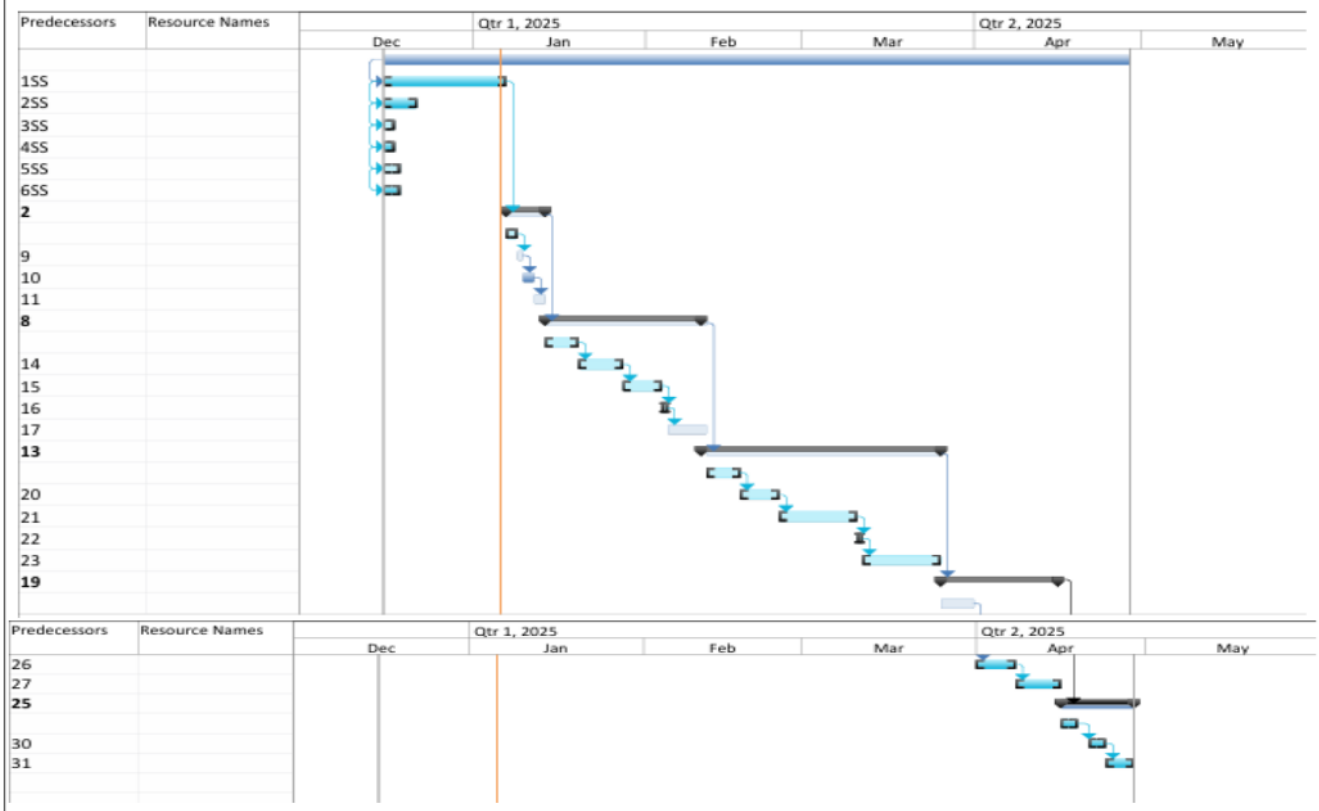

Figure: - The Above chart demonstrate the drafting of the product.

Methodology:

Determining the project's goal to gather accurate weather data from. The choice of hardware is made, including protocols for communication and microcontrollers that (like the Arduino or Raspberry Pi) for data transfer (Johnson, 2021). Sensors that have been calibrated provide data, which is then saved locally or in the cloud and examined for patterns (Williams, 2021). To view the data, a user interface is created (Adams & Lee, 2019). System testing and deployment come next (Miller & Jones, 2023). The work ends with documentation and evaluation, and maintenance guarantees ongoing functionality (Green, 2022).

Resources

The software that I require to complete my Project successfully:

Software's	Source
Arduino IDE	own
Blynk App	own
Blynk Library	own
DHT11 Library	own
I2c Library	own
Windows 11	own
MS Word 2021	own
MS PowerPoint	own
Notepad	own
Microsoft Project 2010	own
browsers: - Google chrome, Microsoft edge	own

The Hardware that I require to complete my Project successfully:

Hardware's	Source
DHT11 Sensor	own
Rain Sensor	own
LDR (Light Dependent Resistor)	own
16×2 LCD with I2C Module	own
Breadboard	own
Jumper Wires	own
Battery (or 5V Power Source)	own
Nodemcu ESP8266 board	own
LCD	own
Lenovo IdeaPad 3	own
AMDA Graphic	own

Human Resource

I am working on my Project with the following people

Name: Rohit Raj Pandey	**Role:** Module Leader
	Module Leader Supervisor

Initial Bibliography

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