MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

Final Year Internship Report

on

SOFTWARE DEVELOPMENT ENGINEERING INTERNSHIP

AMAZON

Submitted By:

AKSHADA WAKANKAR

0901CS181005

Faculty Mentor:

Dr. Manish Dixit

Professor and Head, Department of Computer Science and Engineering

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE
GWALIOR - 474005 (MP) est. 1957

MAY-JUNE 2022

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

SOFTWARE DEVELOPMENT ENGINEERING INTERNSHIP

AMAZON

A final year internship report submitted in partial fulfillment of the requirement for the degree of

BACHELOR OF TECHNOLOGY

in

COMPUTER SCIENCE AND ENGINEERING

Submitted by:

Akshada Wakankar

0901CS181005

Internship Faculty Mentor:

Dr. Manish Dixit

Professor and Head, Department of Computer Science and Engineering

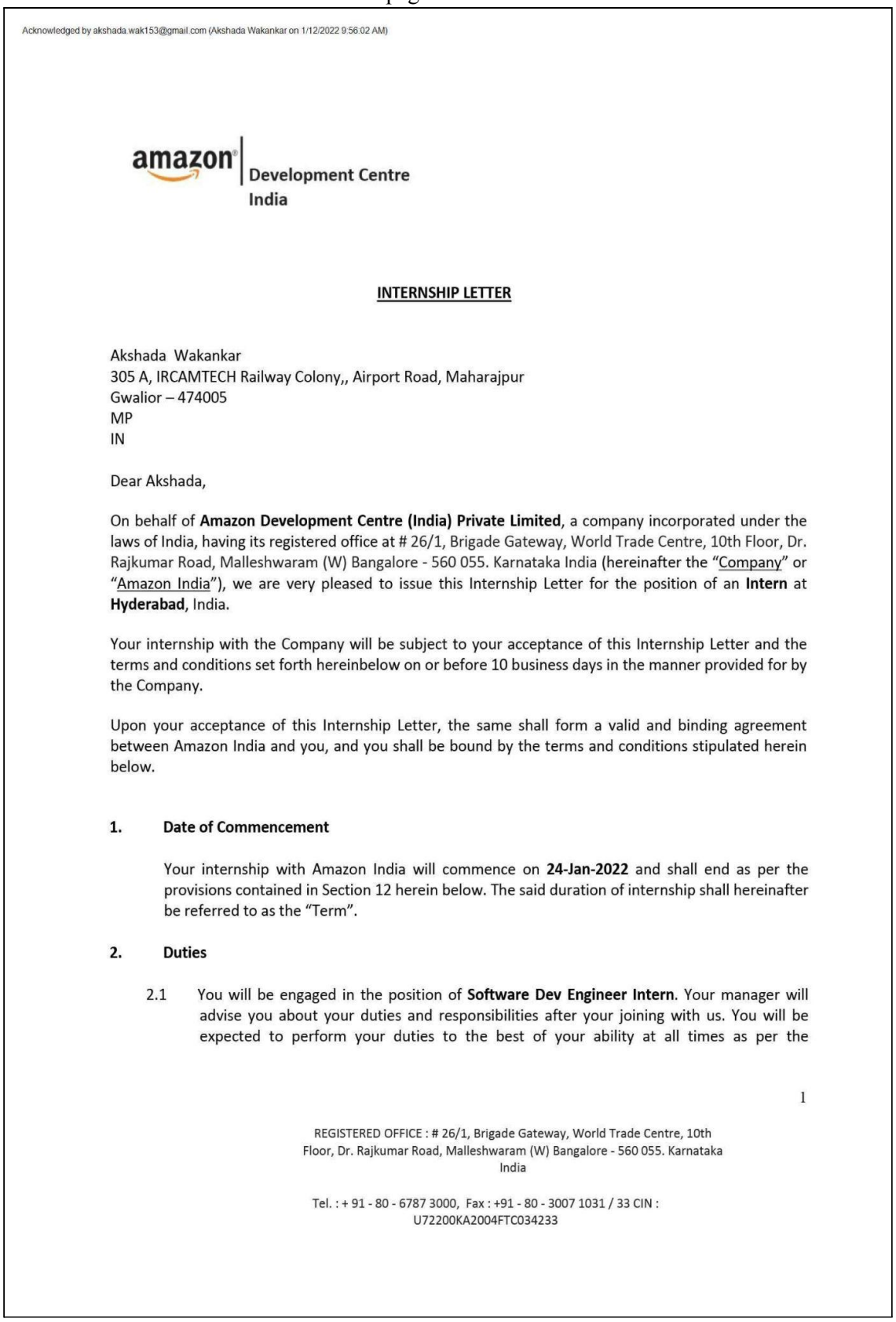
Submitted to:

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE
GWALIOR - 474005 (MP) est. 1957

MAY-JUNE 2022

Internship Offer Letter

First page of offer letter



Acknowledged by akshada.wak153@gmail.com (Akshada Wakankar on 1/12/2022 9:56:02 AM)

amazon | Development Centre India

INTERNSHIP LETTER

Akshada Wakankar
305 A, IRCAMTECH Railway Colony,, Airport Road, Maharajpur
Gwalior – 474005
MP
IN

Dear Akshada,

On behalf of **Amazon Development Centre (India) Private Limited**, a company incorporated under the laws of India, having its registered office at # 26/1, Brigade Gateway, World Trade Centre, 10th Floor, Dr. Rajkumar Road, Malleshwaram (W) Bangalore - 560 055. Karnataka India (hereinafter the "Company" or "Amazon India"), we are very pleased to issue this Internship Letter for the position of an **Intern** at **Hyderabad**, India.

Your internship with the Company will be subject to your acceptance of this Internship Letter and the terms and conditions set forth hereinbelow on or before 10 business days in the manner provided for by the Company.

Upon your acceptance of this Internship Letter, the same shall form a valid and binding agreement between Amazon India and you, and you shall be bound by the terms and conditions stipulated herein below.

1. Date of Commencement

Your internship with Amazon India will commence on **24-Jan-2022** and shall end as per the provisions contained in Section 12 herein below. The said duration of internship shall hereinafter be referred to as the "Term".

2. Duties

2.1 You will be engaged in the position of **Software Dev Engineer Intern**. Your manager will advise you about your duties and responsibilities after your joining with us. You will be expected to perform your duties to the best of your ability at all times as per the

1

REGISTERED OFFICE : # 26/1, Brigade Gateway, World Trade Centre, 10th Floor, Dr. Rajkumar Road, Malleshwaram (W) Bangalore - 560 055. Karnataka India

Tel. : + 91 - 80 - 6787 3000, Fax : +91 - 80 - 3007 1031 / 33 CIN : U72200KA2004FTC034233

Link to the full offer letter:
https://drive.google.com/file/d/1nOfp7T1J0woz3VX0MK2n5TnmkWN7OUTt/view?usp=sharing

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

CERTIFICATE

This is certified that **Akshada Wakankar** (0901CS181005) has submitted the Internship report titled **Software Development Engineering Intern, Amazon** of the work he has done under the mentorship of **Dr. Manish Dixit**, in partial fulfilment of the requirement for the award of degree of Bachelor of Technology in Computer Science and Engineering from Madhav Institute of Technology and Science, Gwalior.

Dr. Manish Dixit
Faculty Mentor
Professor and Head,
Computer Science and Engineering

27/05/2022

Dr. Manish Dixit
Professor and Head,
Computer Science and Engineering

Dr. Manish Dixit
Professor & HOD
Department of CSE
M.I.T.S. Gwalior

DECLARATION

I hereby declare that the work being presented in this Internship report, for the partial fulfilment of requirement for the award of the degree of Bachelor of Technology in CSE at Madhav Institute of Technology & Science, Gwalior is an authenticated and original record of my work under the mentorship of **Dr. Manish Dixit, Professor and Head**, Department of CSE.

I declare that I have not submitted the matter embodied in this report for the award of any degree or diploma anywhere else.

Akshada Wakankar
0901CS181005
IV Year,
Computer Science and Engineering

ACKNOWLEDGEMENT

The full semester internship has proved to be pivotal to my career. I am thankful to my institute, **Madhav Institute of Technology and Science** to allow me to continue my disciplinary/interdisciplinary internship as a curriculum requirement, under the provisions of the Flexible Curriculum Scheme (based on the AICTE Model Curriculum 2018), approved by the Academic Council of the institute. I extend my gratitude to the Director of the institute, **Dr. R. K. Pandit** and Dean Academics, **Dr. Manjaree Pandit** for this.

I would sincerely like to thank my department, **Department of Computer Science and Engineering, for allowing** me to explore this internship. I humbly thank **Dr. Manish Dixit**, Professor and Head, Department of Computer Science and Engineering, for his continued support during the course of this engagement, which eased the process and formalities involved.

I am sincerely thankful to my faculty mentors and industry mentors. I am grateful to the guidance of **Dr. Manish Dixit**, Professor and Head, Department of Computer Science and Engineering, and **Mr. Naresh Dusi**, Software Development Manager, Amazon for their continued support and close mentoring throughout the internship. I am also very thankful to the faculty and staff of the department of Computer Science and Engineering.

Akshada Wakankar
0901CS181005
IV Year,
Computer Science and Engineering

ABSTRACT

One of the many benefits sellers in the 28 European Union States get by selling on Amazon is free-of-charge automated invoice service, also known as VCS or VAT Calculation Services. VCS also allows sellers to upload their own invoices. This flexibility comes with great responsibility. We perform several checks on the invoice document, from virus checks to content validation, so that the buyers receive the right invoices with their orders, leading to better customer experience for both the buyer and the seller at Amazon.

This internship focused on tasks related to VCS Services such as invoice validation and invoice upload user experience. This report describes some of the major technologies worked on, the software development life cycle model followed, and major deliverables so far.

सार:

28 यूरोपीय संघ राज्यों में विक्रेताओं को ऐमेज़ॉन पर बेचने से मिलने वाले कई लाभों में से एक निःशुल्क स्वचालित चालान सेवा है, जिसे VCS या VAT Calculation Services के रूप में भी जाना जाता है। VCS विक्रेताओं को अपने स्वयं के चालान अपलोड करने की भी अनुमति देता है। यह सुविधा बड़ी जिम्मेदारी के साथ आती है। हम इनवॉइस दस्तावेज़ पर वायरस की जाँच से लेकर सामग्री सत्यापन तक कई जाँच करते हैं, ताकि खरीदारों को उनके ऑर्डर के साथ सही चालान मिले, जिससे ऐमेज़ॉन पर खरीदार और विक्रेता दोनों के लिए बेहतर ग्राहक अनुभव प्राप्त हो सके।

यह इंटर्नशिप VCS सेवाओं से संबंधित कार्यों जैसे चालान सत्यापन और चालान अपलोड उपयोगकर्ता अनुभव पर केंद्रित है। इस रिपोर्ट में कुछ प्रमुख तकनीकों, सॉफ्टवेयर विकास जीवन चक्र मॉडल, और अब तक के प्रमुख डिलिवरेबल्स का वर्णन किया गया है।

TABLE OF CONTENTS

TITLE	PAGE NO.
Internship Certificate from Industry	i
Institute Internship Certificate	ii
Declaration	iii
Acknowledgement	iv
Abstract	
List of Abbreviations	
Chapter 1: Internship Overview	
1.1 Introduction	12
1.1.1 Amazon Seller Central	12
1.1.2 VAT Calculation Services (VCS)	13
1.2 Objectives and Scope	13
Chapter 2: Problem Statement	
Problem Statement	14
Chapter 4: Final Analysis and Design	
4.1 List of Deliverables and Results	15
4.1.1 POC on Using AWS Textract with Augmented AI	
4.1.2 POC on Using AWS Machine Learning APIs for Deep Validation of Invoices	15
4.1.3 Implementation of Blank Document Detection and Language Detection steps in the Deep Validation of Invoices	16
4.1.4 Fixing UI Bugs in the System	16
4.2 Problems Faced	16
4.3 Outcomes	16
References	17
Appendices	18

1. Fortnighly Progress Report -1 18
2. Fortnighly Progress Report -2 19
3. Fortnighly Progress Report -3 20
4. Fortnighly Progress Report -4 21
5. Fortnighly Progress Report -5 22
6. Fortnighly Progress Report -6 23
7. Fortnighly Progress Report -7 24

LIST OF ABBREVIATIONS

EU	European Union
VCS	VAT Calculation Service
VAT	Value Added Tax
AWS	Amazon Web Services
POC	Proof of Concept

Chapter 1: INTERNSHIP OVERVIEW

1.1 Introduction

This internship is a Software Development Engineering Internship based in the Amazon Hyderabad office. The area of work is International Seller Services. Within this team, our work focuses on the 28 European Union (EU) states, and helps sellers across Europe to get a great customer experience while selling on Amazon.

1.1.1 Amazon Seller Central

A person's Seller Central account is accessible once they register as an Amazon seller. When it comes to selling on Amazon, Seller Central is the place to go. It is a one-stop shop for managing a seller's Amazon business, including entering product information, updating inventory, managing payments, and finding helpful content to assist them navigate their Amazon business. It is also where all of their products are listed.

Some of the things a seller can perform using Seller Central are listed below.

- The Inventory tab allows users to keep track of inventory and update their listings.
- Download and save custom business reports and templates that they use frequently.
- Customer metrics tools could be used to keep track of a seller's performance.
- Contact Selling Partner Support and open help tickets using the Case Log
- Keep track of their Amazon sales on a daily basis for all of the things they sell.

1.1.2 VAT Calculation Services (VCS)

Amazon's VAT Calculation Services (or VCS) is a free-of-charge automated invoicing service that performs VAT calculations for the 28 European Union member states, based on seller-determined tax calculation settings. We generate invoices on behalf of sellers.

We also allow sellers to upload their own invoices.

1.2 Objectives and Scope

The goal of this six-month internship was to give students an experience of what it is like to work at Amazon. The work I did during this internship had a significant impact, since I was able to dive into products, programmes, and services that affect millions of people. The internship began with a thorough onboarding process that allowed me to work with and learn from the manager, mentor, and team, as well as work on projects that affect a significant number of customers on a daily basis. It also qualifies me for a full-time position as a Software Development Engineer at Amazon based on my performance and deliverables.

Chapter 2: PROBLEM STATEMENT

The VCS allows sellers to upload their own invoices. This flexibility comes with great responsibility. We have to check whether the seller has uploaded an invoice in the right format (PDF format) within the required time. We also have to perform several checks on the invoice document, such as virus scans.

- So far, we have been able to solve the problem of sellers not providing invoices.
- However, invoices uploaded by the sellers in the form of PDF can be defective in one or other ways.
- The actual content of the PDF must be verified in order to ensure the seller is not uploading anything invalid.
- Some sellers are uploading invoices that are missing some information.
- Some sellers are uploading documents that are not invoices.
- Several others are uploading documents in a language that is not supported by our system.
- Some sellers are even uploading blank documents.

Chapter 3: FINAL ANALYSIS AND DESIGN

3.1 List of Deliverables and Results

My tasks in the internship included the following deliverables:

3.1.1 POC on Using AWS Textract with Augment AI

- One of the requirements in later stages of the Invoice Validation Project is to develop an audit tool that allows human review of invoices, and the results given by AWS Machine Learning APIs after working on these invoices.
- The results of this POC were helpful in identifying some of the benefits as well as limitations of this approach for our use case, and points to work on.

3.1.2 POC On Using AWS Machine Learning APIs for Deep Validation of Invoices

- This POC was required to identify potential issues that we may face while using the particular AWS APIs.
- The results of this POC were helpful in identifying some of the limitations, which helped the team to find workarounds and solve the issues.

3.1.3 Implementation of Blank Document Detection and Language Detection steps in the Deep Validation of Invoices

- Implemented blank document detection and language detection steps in Java/.
- Wrote unit tests for the steps.
- Performed thorough testing on Beta and Gamma stages.
- The project was successfully launched in production.

3.1.4 Fixing UI Bugs in the System

Fixed two important UI bugs in the existing system which were directly impacting customers, and deployed the fix in production.

3.2 Problems Faced

- The technology stack used was new to me, so it took some time for me to learn and get familiar with it. However, Amazon's internal resources were helpful in catching up with it.
- Initially I required some help from teammates to tackle roadblocks, but I gradually started doing my tasks more independently, and learned to ask for help at the right time.

3.3 Outcomes

The first stage of the project has been successfully launched in production in shadow mode. The POCs have been helpful in achieving this. The UI bug fix is also live in production.

REFERENCES

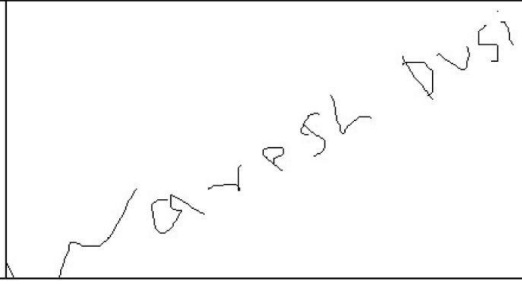
The following sources were used as reference for the generation of this report:

1. https://sell.amazon.co.uk/
2. Amazon Internal Resources

APPENDIX

1. Fortnightly Progress Report - 1

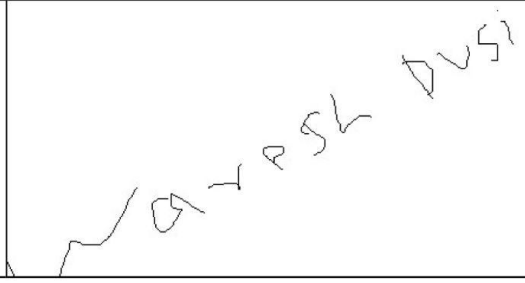
FORTNIGHTLYPROGRESSREPORT(FPR)FROMINDUSTRYMENTOR

Nameofstudent	Akshada Wakankar		Department	Computer Science & Engineering	
Industry/Organization	Amazon		Date/Duration	24/01/22-15/02/22	
Criterion	**Poor**	**Average**	**Good**	**VeryGood**	**Excellent**
Punctuality/Timelycompletionofassignedwork					**Excellent**
Learningcapacity/Knowledge upgradation					**Excellent**
Performance/Qualityofwork					**Excellent**
Behaviour/Discipline/Team work					**Excellent**
Sincerity/Hardwork					**Excellent**
Comment on nature of workdone/Area/Topic	Currently Akshada on her ramp up plan. Overall she is picking up well. There are few tasks been assigned and she did well.				
OVERALLGRADE (Anyone)	**EXCELLENT**				
NameofIndustryMentor	Naresh Dusi				
SignatureofIndustry Mentor					

ReceivingDate		**Name of FacultyMentor**		**Sign**	

2. Fortnightly Progress Report - 2

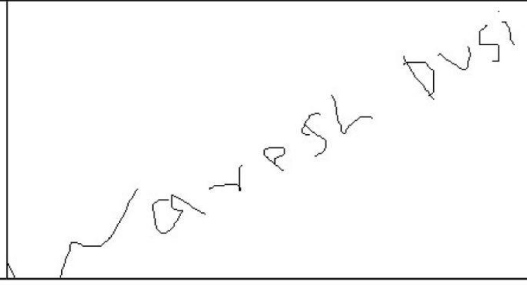
FORTNIGHTLYPROGRESSREPORT(FPR)FROMINDUSTRYMENTOR

Nameofstudent	Akshada Wakankar		Department	Computer Science & Engineering	
Industry/Organization	Amazon		Date/Duration	16/02/22-28/02/22	
Criterion	**Poor**	**Average**	**Good**	**VeryGood**	**Excellent**
Punctuality/Timelycompletionofassignedwork					**Excellent**
Learningcapacity/Knowledge upgradation					**Excellent**
Performance/Qualityofwork					**Excellent**
Behaviour/Discipline/Team work					**Excellent**
Sincerity/Hardwork					**Excellent**
Comment on nature of workdone/Area/Topic	Akshada been assigned on some new work for AWS Augmented API workflow understanding and doing proof of concept. Initially learning and finding she did overall well.				
OVERALLGRADE (Anyone)	**EXCELLENT**				
NameofIndustryMentor	Naresh Dusi				
SignatureofIndustry Mentor					

ReceivingDate		**Name ofFacultyMentor**		**Sign**	

3. Fortnightly Progress Report - 3

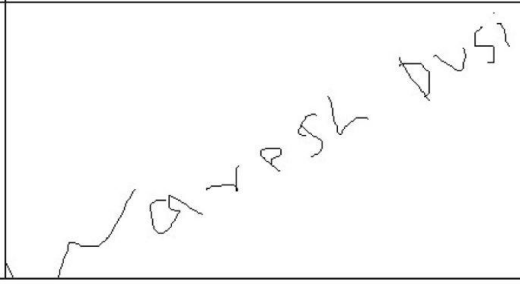
FORTNIGHTLYPROGRESSREPORT(FPR)FROMINDUSTRYMENTOR

Nameofstudent	Akshada Wakankar		Department	Computer Science & Engineering	
Industry/Organization	Amazon		Date/Duration	01/03/22-15/03/22	
Criterion	**Poor**	**Average**	**Good**	**VeryGood**	**Excellent**
Punctuality/Timelycompletionof assigned work					**Excellent**
Learning capacity/Knowledge upgradation				**Very Good**	
Performance/Qualityofwork					**Excellent**
Behavior/Discipline/Team work					**Excellent**
Sincerity/Hardwork					**Excellent**
Comment on nature of workdone/Area/Topic	Akshada have finished her task on doing POC on Augmented AI UI task. Task needed to do a POC on different APIs and Tools for providing human review workflow for validation ML model of AWS APIs. She produced document of learning. She did well on this. Now She is working on some API integration of detecting Language. Overall She is doing great.				
OVERALLGRADE (Anyone)	**EXCELLENT**				
NameofIndustryMentor	Naresh Dusi				
SignatureofIndustry Mentor					

ReceivingDate		**Name ofFacultyMentor**		**Sign**	

4. Fortnightly Progress Report - 4

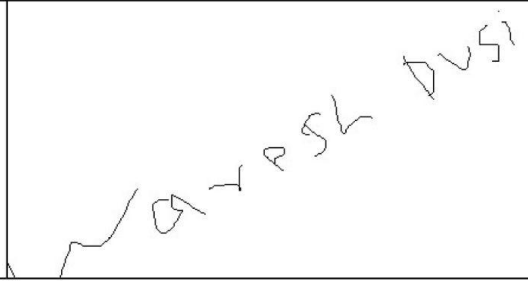
FORTNIGHTLY PROGRESS REPORT(FPR) FROM INDUSTRY MENTOR

Nameofstudent	Akshada Wakankar		Department	Computer Science & Engineering	
Industry/Organization	Amazon		Date/Duration	16/03/22-31/03/22	
Criterion	**Poor**	**Average**	**Good**	**VeryGood**	**Excellent**
Punctuality/Timelycompletionof assigned work					**Excellent**
Learning capacity/Knowledge upgradation			Good		
Performance/Qualityofwork			Good		**Excellent**
Behavior/Discipline/Team work					**Excellent**
Sincerity/Hardwork					**Excellent**
Comment on nature of workdone/Area/Topic	Akshada is now moved to more Deliverable tasks for writing Lambda step function related to Invoice accuracy project. She is putting great effort to pickup related tools and framework. And now we are close to delivery so good job Observation: She needs to manage things little more independently now. She is currently require hand holding and follow-up on deliverable and closing things.				
OVERALLGRADE (Anyone)	**Good**				
NameofIndustryMentor	Naresh Dusi				
SignatureofIndustry Mentor					

ReceivingDate		**Name of Faculty Mentor**		**Sign**	

5. Fortnightly Progress Report - 5

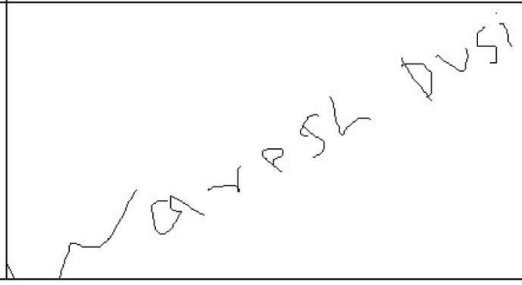
FORTNIGHTLYPROGRESSREPORT(FPR)FROMINDUSTRYMENTOR

Nameofstudent	Akshada Wakankar		Department	Computer Science & Engineering	
Industry/Organization	Amazon		Date/Duration	01/04/22-15/04/22	
Criterion	**Poor**	**Average**	**Good**	**VeryGood**	**Excellent**
Punctuality/Timelycompletionof assigned work					**Excellent**
Learning capacity/Knowledge upgradation				**Very good**	
Performance/Quality of work				**Very Good.**	
Behavior/Discipline/Team work					**Excellent**
Sincerity/Hard work					**Excellent**
Comment on nature of work done/Area/Topic	Akshada code for new lambda step function with Language detection integration is about to live this week. She has improved after initial feedback on learning and doing task more independently. Learned on many best practices and their implementation Next few weeks now she will be working on TaxDocumentStore service creation and flows again a critical service to own and deliver.				
OVERALLGRADE (Any one)	**Very Good.**				
Name of Industry Mentor	Naresh Dusi				
Signature of Industry Mentor					

ReceivingDate		**Name ofFacultyMentor**		**Sign**	

6. Fortnightly Progress Report - 6

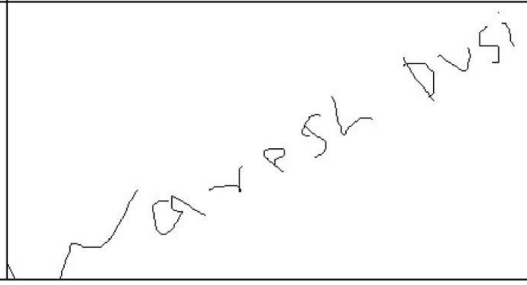
FORTNIGHTLYPROGRESSREPORT(FPR)FROMINDUSTRYMENTOR

Nameofstudent	Akshada Wakankar		Department	Computer Science & Engineering	
Industry/Organization	Amazon		Date/Duration	16/04/22-30/04/22	
Criterion	**Poor**	**Average**	**Good**	**VeryGood**	**Excellent**
Punctuality/Timelycom pletionof assigned work				**Very Good**	
Learning capacity/Knowledge upgradation					**Excellent**
Performance/Quality of work				**.**	**Excellent**
Behavior/Discipline/Team work					**Excellent**
Sincerity/Hard work					**Excellent**
Comment on nature of work done/Area/Topic	Akshada have worked hard for one of Go live project for IDRV2.0 Project. Her contribution was significant and created customer impact. She got overall very positive feedback from all stakeholders.				
OVERALLGRADE (Any one)	**Very Good.**				
Name of Industry Mentor	Naresh Dusi				
Signature of Industry Mentor					

ReceivingDate		**Name ofFacultyMentor**		**Sign**	

7. Fortnightly Progress Report - 7

FORTNIGHTLYPROGRESSREPORT(FPR)FROMINDUSTRYMENTOR

Nameofstudent	Akshada Wakankar		Department	Computer Science & Engineering	
Industry/Organization	Amazon		Date/Duration	01/05/22-15/05/22	
Criterion	**Poor**	**Average**	**Good**	**VeryGood**	**Excellent**
Punctuality/Timelycompletionof assigned work				**Very Good**	
Learning capacity/Knowledge upgradation					**Excellent**
Performance/Quality of work				.	**Excellent**
Behavior/Discipline/Team work					**Excellent**
Sincerity/Hard work					**Excellent**
Comment on nature of work done/Area/Topic	She now focused on some of UI improvements which were directly impacting customers. This require different skills on UI side. She did well by reaching sr member and understanding fixes. Her this code also now in production,				
OVERALLGRADE (Any one)	**Very Good.**				
Name of Industry Mentor	Naresh Dusi				
Signature of Industry Mentor					

ReceivingDate		**Name ofFacultyMentor**		**Sign**	

turnitin

Similarity Report ID: oid:28506:17748325

PAPER NAME
akshada latest report.docx

AUTHOR
Akshada Wakankar

WORD COUNT
1401 Words

CHARACTER COUNT
7090 Characters

PAGE COUNT
21 Pages

FILE SIZE
2.3MB

SUBMISSION DATE
May 27, 2022 3:18 PM GMT+5:30

REPORT DATE
May 27, 2022 3:19 PM GMT+5:30

15% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

- 6% Internet database
- 1% Publications database
- Crossref database
- Crossref Posted Content database
- 15% Submitted Works database

Excluded from Similarity Report

- Bibliographic material
- Quoted material

Summary