

Arundathi K L

Assistant Professor – Department of Management Studies

K S School of Engineering and Management, Bengaluru

arundathi@kssem.edu.in/ kl.arundathi@gmail.com

9535344008

Project Flow:

To accomplish this, we have to complete all the activities listed below,

1. Define Problem / Problem Understanding

a. Specify the business problem

How can educational institutions and online learning platforms optimize the delivery of online education to ensure that it effectively addresses the mental well-being and holistic development of students, while also addressing the potential challenges and limitations of the online learning environment, especially in the post-lockdown era?

b. Business requirements

- Determining the business requirements based on the inputs and feedbacks from students and teachers about the online education through surveys
- Updating the content
- Creating necessary arrangements for e-learning to both students and teachers with the help of online education platforms
- Specific requirements may vary depending on the student demographic, their needs and their interests

c. Literature Survey

EdTech:

Educational technology (edtech) has become an integral part of modern education, revolutionizing the way students learn and teachers instruct. This literature review provides insights into the role of edtech in contemporary education, highlighting its benefits, challenges, and implications for educators, students, and policymakers.

Benefits of Edtech in Education

- Enhanced Engagement (Kebritchi et al., 2017)
- Personalized Learning (Baker, 2017)
- Accessibility (Tondeur et al., 2019)
- Data-Driven Decision-Making (Siemens & Gasevic, 2012)

Challenges and Concerns

- Technological Gaps: (Warschauer & Matuchniak, 2010)
- Privacy and Security: (Greenhow & Chapman, 2020)
- Digital Overload: (Twenge & Campbell, 2018)
- Teacher Training: (Ertmer et al., 2012)

Implications for Policy and Practice:

- Professional Development (Kopcha et al., 2013)
- Equity and Access: (Penuel & Gallagher, 2017)
- Data Privacy Regulations: (Nasir & Kayworth, 2015)
- Research and Evaluation: (Means et al., 2013)

Students Behaviour towards Online Education:

Online education has become increasingly prevalent in recent years, and understanding student behavior in this context is crucial for educators, institutions, and policymakers. This literature review examines student behavior towards online education, including factors influencing participation, engagement, and outcomes.

Factors Influencing Student Behavior in Online Education

- Access and Technology Proficiency (Means et al., 2013)
- Motivation and Self-Discipline (Artino, 2008)
- Course Design and Structure (Anderson, 2008)
- Social Interaction (Rovai, 2002)

Student Engagement and Participation

- Active Participation (Fredricks et al., 2004)
- Communication (Lowenthal et al., 2019)
- Feedback (Garrison et al., 1999)
- Time Management (Fetzner, 2013)

Challenges and Barriers

- Isolation and Loneliness (Richardson et al., 2017)
- Technical Issues (Johnson et al., 2018)
- Lack of Accountability (Kizilcec et al., 2020)
- Digital Distractions (Junco et al., 2011)

d. Social or Business Impact.

The outcomes of this project will provide valuable insights for educational institutions, policymakers, and online learning platforms to enhance the effectiveness and accessibility of online education. This analysis of the online education system aims to contribute to the ongoing dialogue on the future of education and help shape a more inclusive, engaging, and effective learning environment in the digital age.

2. Data Collection

a. Collect the dataset

Data has been collected from the link
<https://drive.google.com/file/d/1O39CDVV9CkPthvNO7z2GHbyxRPKm2Ey6/view?pli=1>

Data Set Name: Online Education System Review

File Type: .csv

INBOX - arundathi.kl@gmail.com ONLINE EDUCATION SYSTEM REVIEW

drive.google.com/file/d/1O39CDVV9CkPthvNO7z2GHbyxRPKm2Ey6/view

ATL - AICTE Train... Ph.D | UNIVERSITY... Google Scholar Mendeley Referenc... Knimbus - Your Libr... Home Feed | Resear... User Home SWAYAM

ONLINE EDUCATION SYSTEM REVIEW.csv

Open with

	A	B	C	D	E	F	G	H	I	J	K
1	Gender	Home Location	Level of Education	Age(Years)	Number of Subjects	Device type used to	Economic status	Family size	Internet facility in yo	Are you involved in c	Do elderly people n
2	Male	Urban	Under Graduate	18	11	Laptop	Middle Class	4	5	No	Yes
3	Male	Urban	Under Graduate	19	7	Laptop	Middle Class	4	1	Yes	Yes
4	Male	Rural	Under Graduate	18	5	Laptop	Middle Class	5	2	No	Yes
5	Male	Urban	Under Graduate	18	5	Laptop	Middle Class	4	4	Yes	Yes
6	Male	Rural	Under Graduate	18	5	Laptop	Middle Class	4	3	No	No
7	Male	Urban	Under Graduate	18	5	Laptop	Middle Class	4	4	Yes	Yes
8	Male	Urban	Under Graduate	19	5	Laptop	Middle Class	5	5	No	No
9	Male	Urban	Under Graduate	17	4	Laptop	Middle Class	4	4	Yes	Yes
10	Female	Urban	Under Graduate	19	5	Laptop	Middle Class	4	4	No	Yes
11	Female	Rural	Under Graduate	20	9	Laptop	Middle Class	4	3	No	Yes
12	Female	Urban	Under Graduate	18	4	Desktop	Middle Class	3	5	No	No
13	Male	Rural	Post Graduate	25	5	Mobile	Middle Class	2	3	No	Yes
14	Male	Urban	Under Graduate	20	7	Laptop	Middle Class	4	4	Yes	No
15	Male	Urban	Under Graduate	17	5	Laptop	Middle Class	4	4	Yes	Yes
16	Male	Urban	School	21	5	Laptop	Middle Class	5	4	Yes	Yes
17	Male	Urban	School	20	5	Desktop	Middle Class	4	3	Yes	Yes
18	Female	Urban	Post Graduate	20	9	Laptop	Middle Class	4	4	No	Yes
19	Male	Rural	Post Graduate	23	4	Desktop	Middle Class	6	3	No	No
20	Female	Urban	School	18	4	Desktop	Middle Class	4	4	No	Yes

ENG IN 10:55 AM 10-09-2023

Then performed **Activity 1.1: Understand the data** through various fields / columns description online education system review.

b. Connect data with IBM cognos

Next, I have logged in to

Search results - Google Drive RM Notes DMM Class slide - kl... IBMId - Sign in or create an IBMId

login.ibm.com/authsvc/mtfim/sps/authsvc?PolicyId=urn:ibm:security:authentication:asf:basicdapuser&Target=https%3A%2F%2Flogin.ibm.com...

IBM

Log in to IBM

IBMId

kl.arundathi@gmail.com

Continue

☐ Remember me ⓘ

Don't have an account?

Create an IBMId

Forgot IBMId? [Contact the IBMId help desk](#)

ENG IN 10:56 AM 10-09-2023

<https://myibm.ibm.com/dashboard/>

<https://us1.ca.analytics.ibm.com/bi/?perspective=home>

The screenshot shows the IBM Cognos Analytics interface. At the top, there's a navigation bar with the IBM logo and a search bar. Below it, a maintenance banner is visible. The main area is titled 'Recent' and displays a list of content items. Each item has a checkbox, a name, a location, a type, and a last accessed date. The items listed are: 'Online Education' (Data module), 'story online education' (Story), 'dashboard Online Education' (Dashboard), 'exploration online education' (Exploration), and 'New report online education' (Report). All items are located under 'My content' and were last accessed on 30/08/2023.

Name	Location	Type	Last Accessed
Online Education	My content	Data module	30/08/2023, 13:05
story online education	My content	Story	30/08/2023, 12:52
dashboard Online Education	My content	Dashboard	30/08/2023, 12:50
exploration online education	My content	Exploration	30/08/2023, 12:49
New report online education	My content	Report	30/08/2023, 12:16

Uploaded the Data

The screenshot shows the IBM Cognos Analytics interface with the 'Online Education' data module selected. The left sidebar shows the 'Data module' list with 'ONLINE ED...VIEW.csv' selected. The main area displays a grid view of the data. The grid has columns for Row Id, Gender, Home Location, Level of Education, Age(Years), and Num. The data is as follows:

Row Id	Gender	Home Location	Level of Education	Age(Years)	Num
1	Male	Urban	Under Graduate	18	11
2	Male	Urban	Under Graduate	19	7
3	Male	Rural	Under Graduate	18	5
4	Male	Urban	Under Graduate	18	5
5	Male	Rural	Under Graduate	18	5
6	Male	Urban	Under Graduate	18	5
7	Male	Urban	Under Graduate	19	5
8	Male	Urban	Under Graduate	17	4
9	Female	Urban	Under Graduate	19	5
10	Female	Rural	Under Graduate	20	9

3. Data Preparation

a. Prepare the Data for Visualization

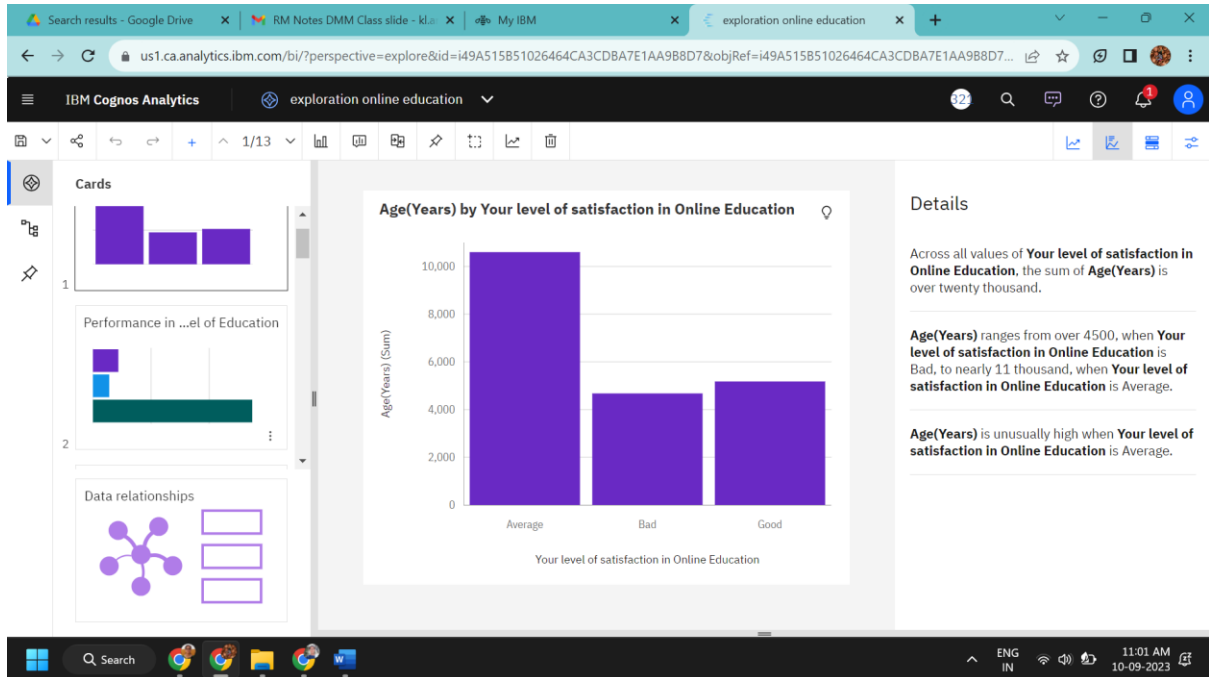
https://us1.ca.analytics.ibm.com/bi/?perspective=ca-modeller&id=iB17DDCB81862482DB1D87E3123C740FD&objRef=iB17DDCB81862482DB1D87E3123C740FD&tid=329690778_7a783e11c27e460aa8eee5b5cb004cc7_sessionTemp

- Data set has been renamed
- Aggregation function was carried out “count distinct”

Data set is ready for the further analysis.

4. Data Visualizations

a. No of Unique Visualizations



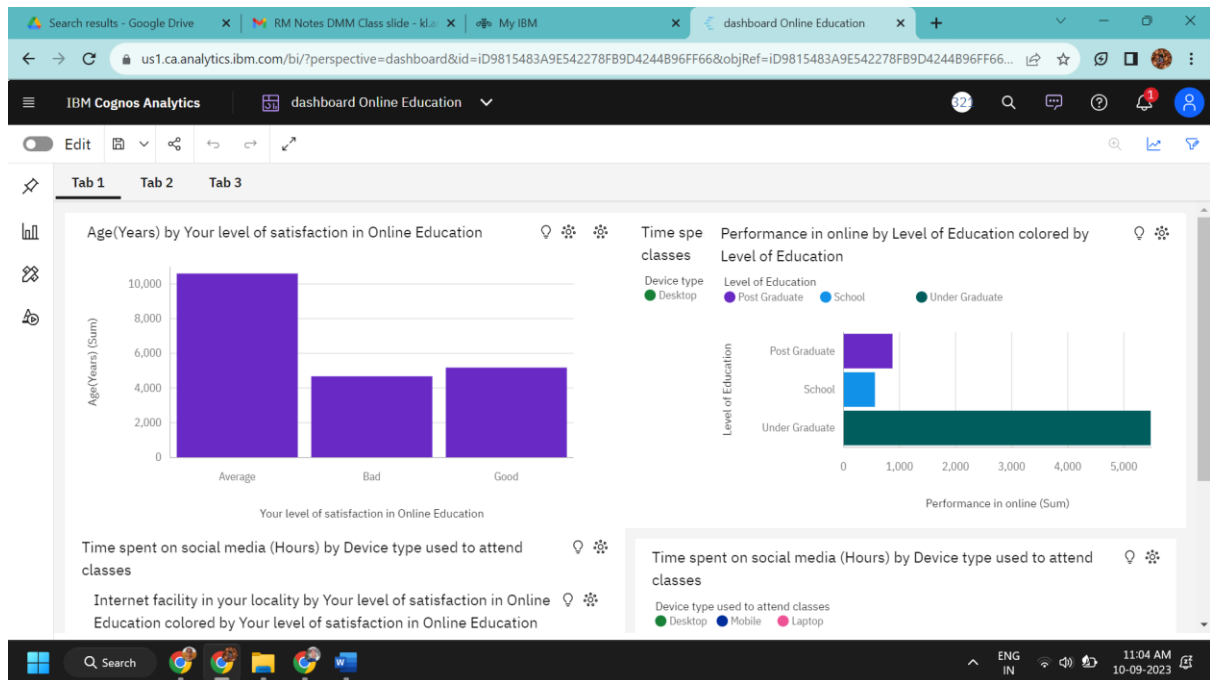
https://us1.ca.analytics.ibm.com/bi/?perspective=explore&pathRef=.my_folders%2Fexploration%2Bonline%2Beducation&subView=model0000018a41b5d823_00000000

- Totally 8 unique visualizations / charts have been created using exploration function and same has been pinned
 - o Activity 1.1: Column Chart
 - o Activity 1.2: Bar Chart
 - o Activity 1.3: Bar chart
 - o Activity 1.4: Pie Chart
 - o Activity 1.5: Packed Bubble
 - o Activity 1.6: Word Cloud
 - o Activity 1.7: Table
 - o Activity 1.8: Radial Chart
- Embedded link was copied using share option
- All charts were copied and pasted in word document and then it has been converted to pdf document

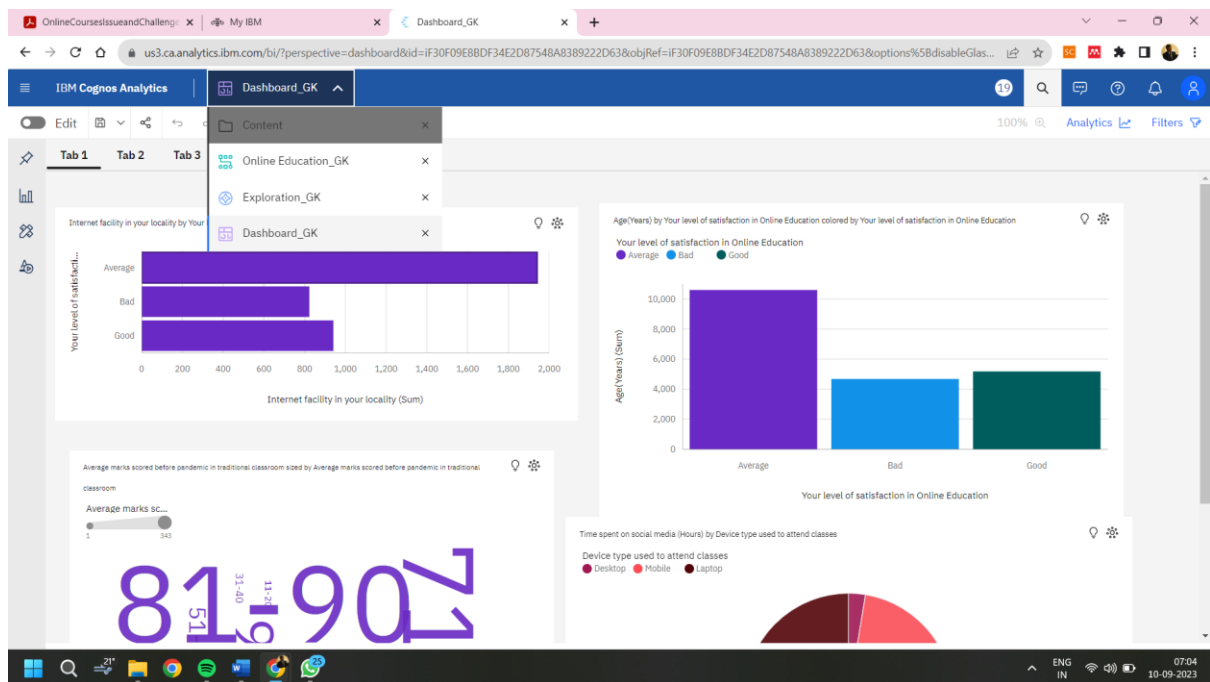
5. Dashboard

a. Responsive and Design of Dashboard

https://us1.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2Fdashboard%2BOnline%2BEducation&action=view&mode=dashboard&subView=model0000018a41dd7adb_00000002

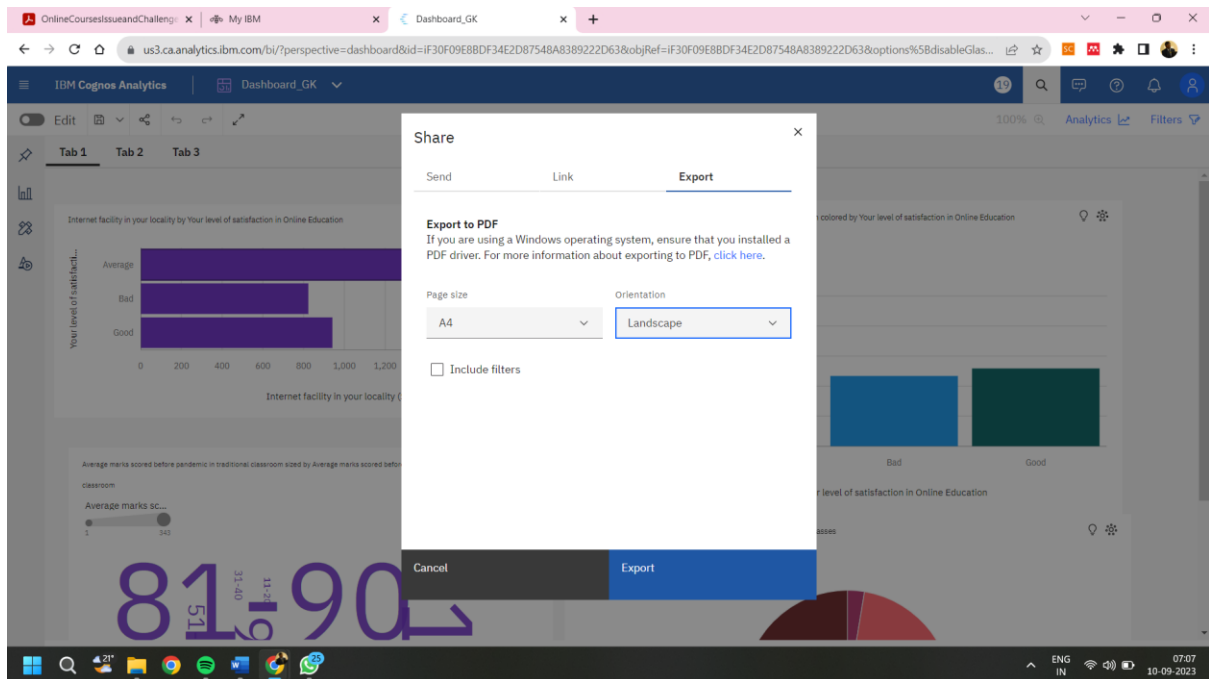


Embedded Code:



- 3 different tabs in dashboards created using the pinned visualizations from activities 1.1 to 1.8

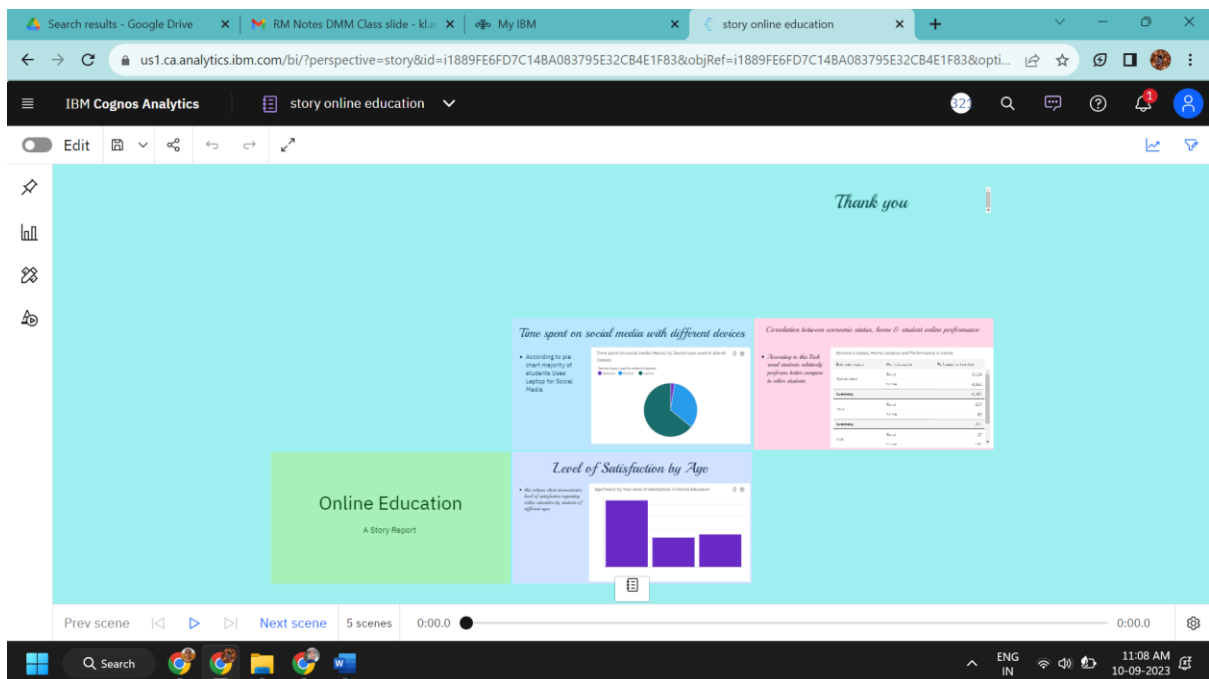
- Link and embedded codes were copied using share option
- All 3 tabs in dashboards were exported to pdf using share option and saved in the folder
- Then next step is to create a story based on dashboards



6. Story

a. No of Scenes of Story

https://us1.ca.analytics.ibm.com/bi/?perspective=story&pathRef=.my_folders%2Fstory%2Bo%2Feducation&action=view&sceneId=-1&sceneTime=0

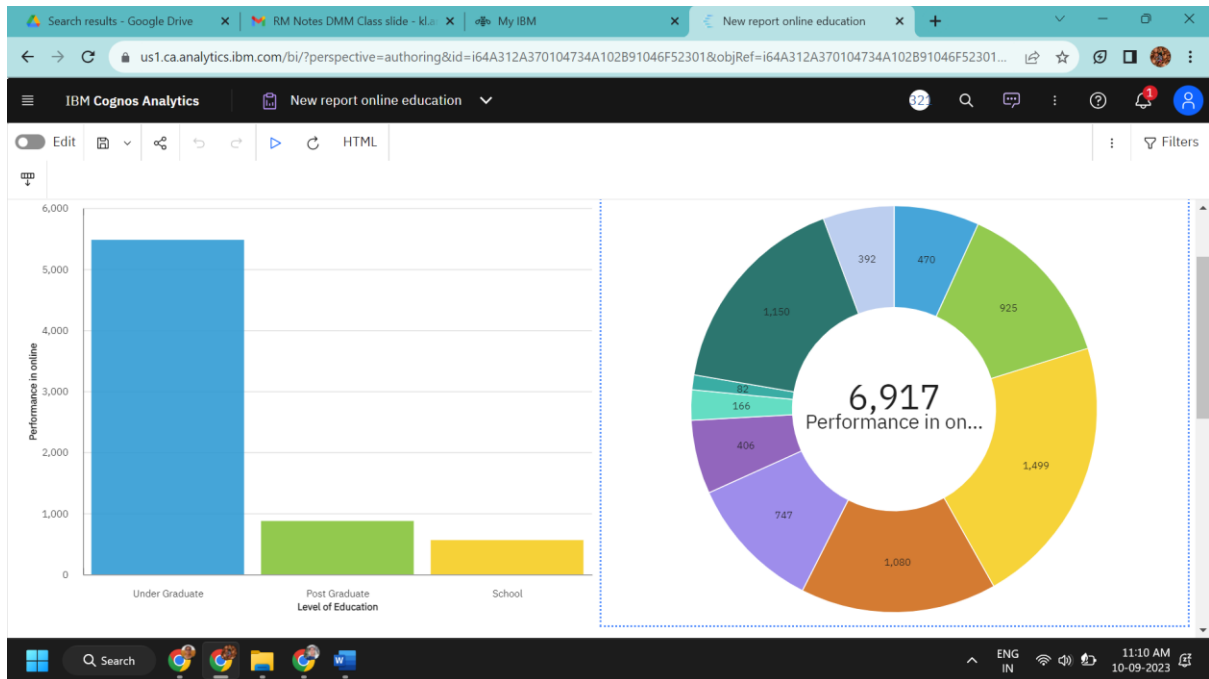


- Story was created using 8 scenes

- Link and embedded codes were copied using share option
- All 8 scenes of story were exported to pdf using share option and saved in the folder

7. Report

a. Creating a report

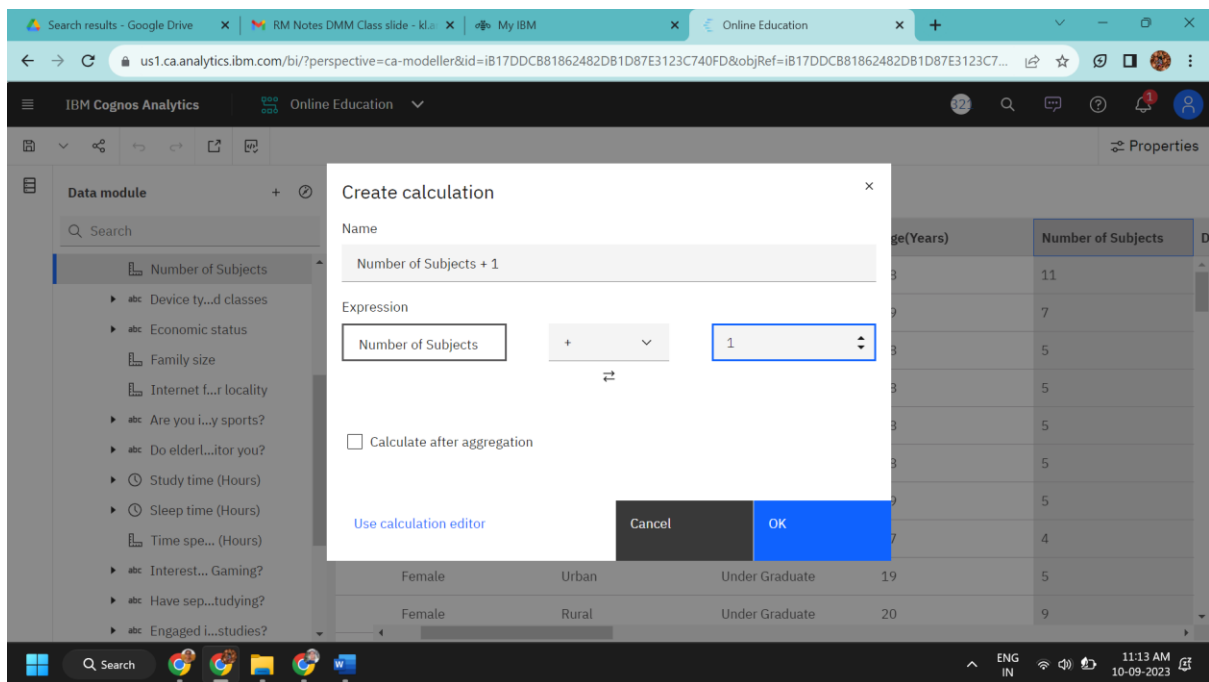
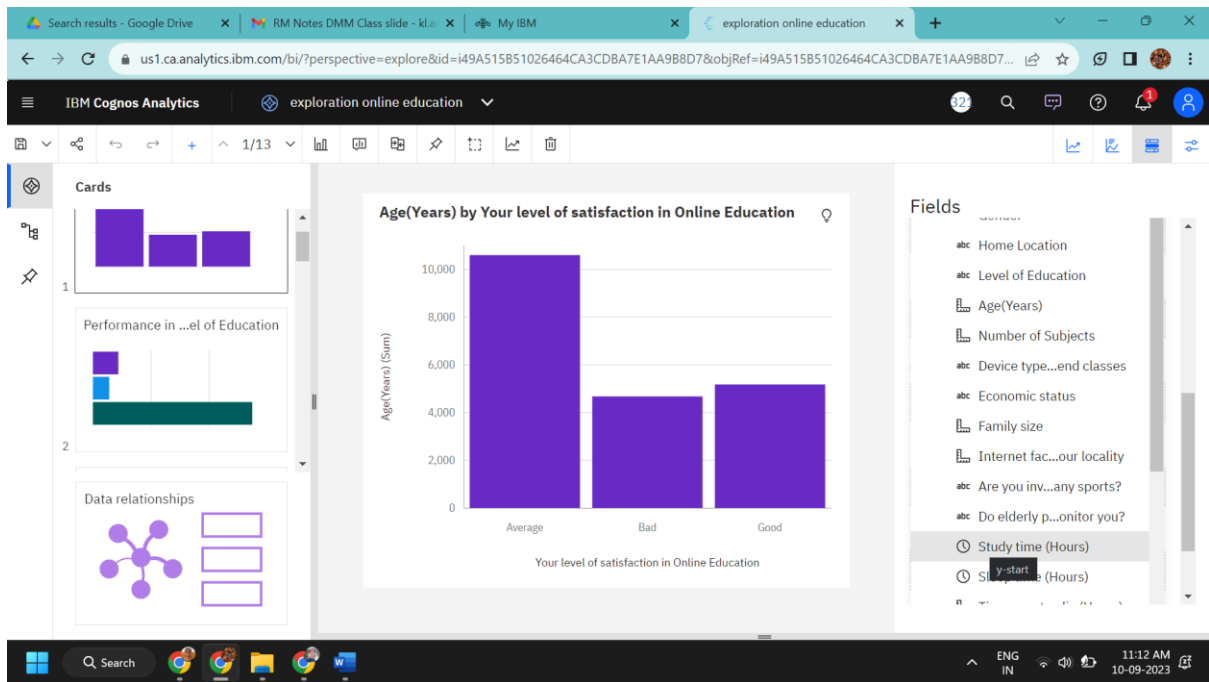


https://us1.ca.analytics.ibm.com/bi/?pathRef=.my_folders%2FNew%2Breport%2Bonline%2Beducation&action=run&format=HTML&prompt=false

- There are 4 different stories were created to create Report using various fields from the data set.
- Link and embedded codes were copied using share option
- Report was exported to pdf using share option and saved in the folder

8. Performance Testing

- Amount of Data Rendered to DB
- Utilization of Data Filters
- No of Calculation Fields
- No of Visualizations/ Graphs



Performance Testing has been conducted.

9. Web Integration

- Dashboard and Story embed with UI With Flask

Integrating dashboards/stories/reports to web

The Embed Code:

Exploration

```
<iframe
src="https://us1.ca.analytics.ibm.com/bi/?perspective=explore&pathRef=.my_folders%2Fexploration%2Bonline%2Beducation&closeWindowOnLastView=true&ui_appbar=false&ui_navbar=false&shareMode=embedded&subView=model0000018a41b5d823_00000000" width="320" height="200" frameborder="0"
gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>
```

Dashboard

```
<iframe
src="https://us1.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2Fdashboard%2Bonline%2Beducation&closeWindowOnLastView=true&ui_appbar=false&ui_navbar=false&shareMode=embedded&action=view&mode=dashboard&subView=model0000018a41dd7adb_00000002" width="320"
height="200" frameborder="0" gesture="media" allow="encrypted-media"
allowfullscreen=""></iframe>
```

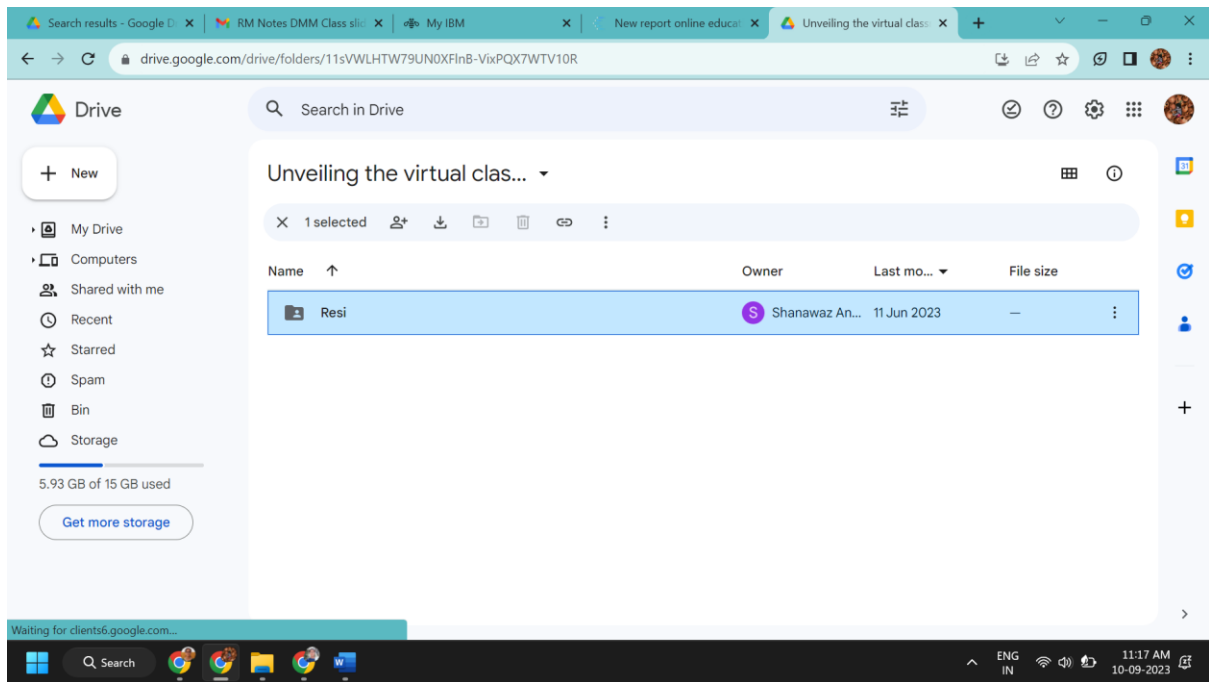
Story

```
<iframe
src="https://us1.ca.analytics.ibm.com/bi/?perspective=story&pathRef=.my_folders%2Fstory%2Bonline%2Beducation&closeWindowOnLastView=true&ui_appbar=false&ui_navbar=false&shareMode=embedded&action=view&sceneId=-1&sceneTime=0" width="320" height="200" frameborder="0"
gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>
```

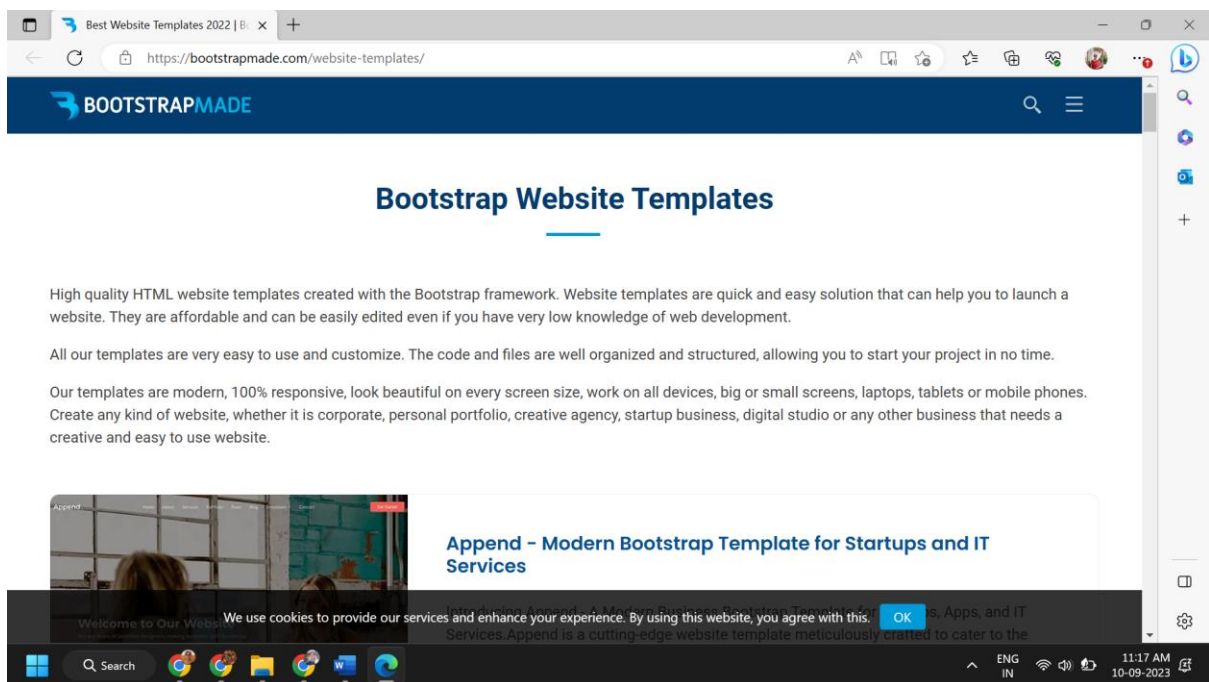
Report

```
<iframe
src="https://us1.ca.analytics.ibm.com/bi/?pathRef=.my_folders%2FNew%2Breport%2Bonline%2Beducation&closeWindowOnLastView=true&ui_appbar=false&ui_navbar=false&shareMode=embedded&action=run&format=HTML&prompt=false" width="320" height="200" frameborder="0" gesture="media"
allow="encrypted-media" allowfullscreen=""></iframe>
```

<https://drive.google.com/drive/folders/1sVWLHTW79UN0XFlNB-VixPQX7WTV10R>



<https://bootstrapmade.com/website-templates/> using this link website template was decided

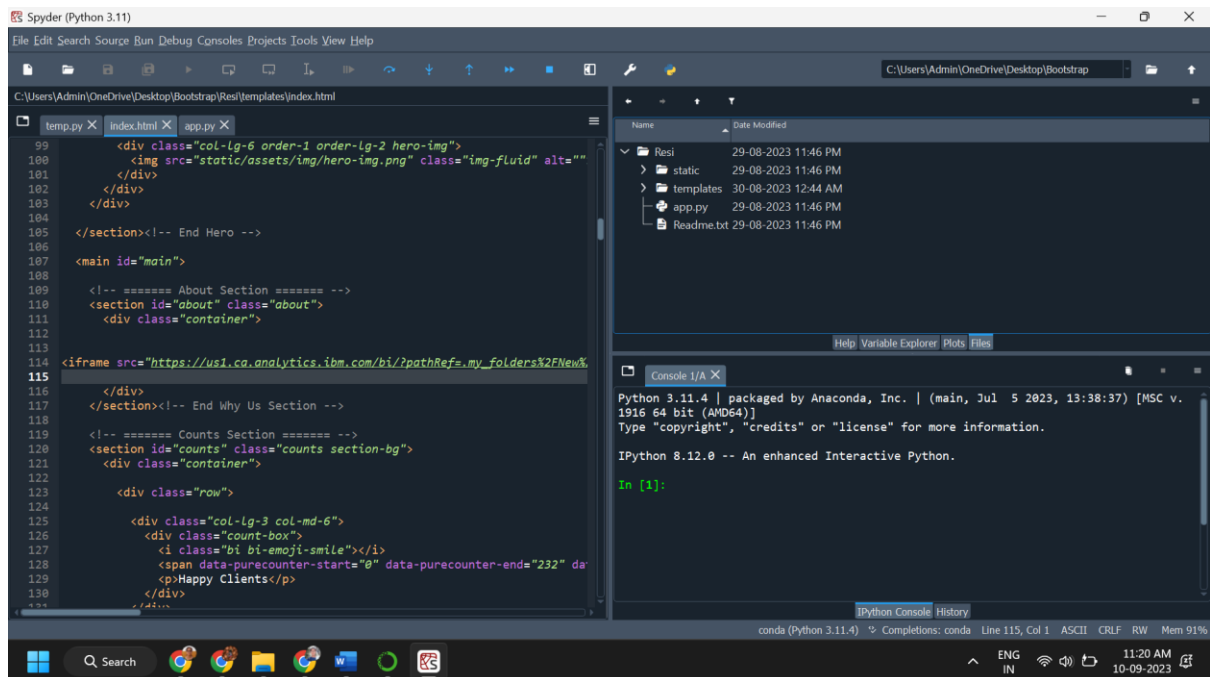


Then I used Python – Anaconda / Spyder for the web integration

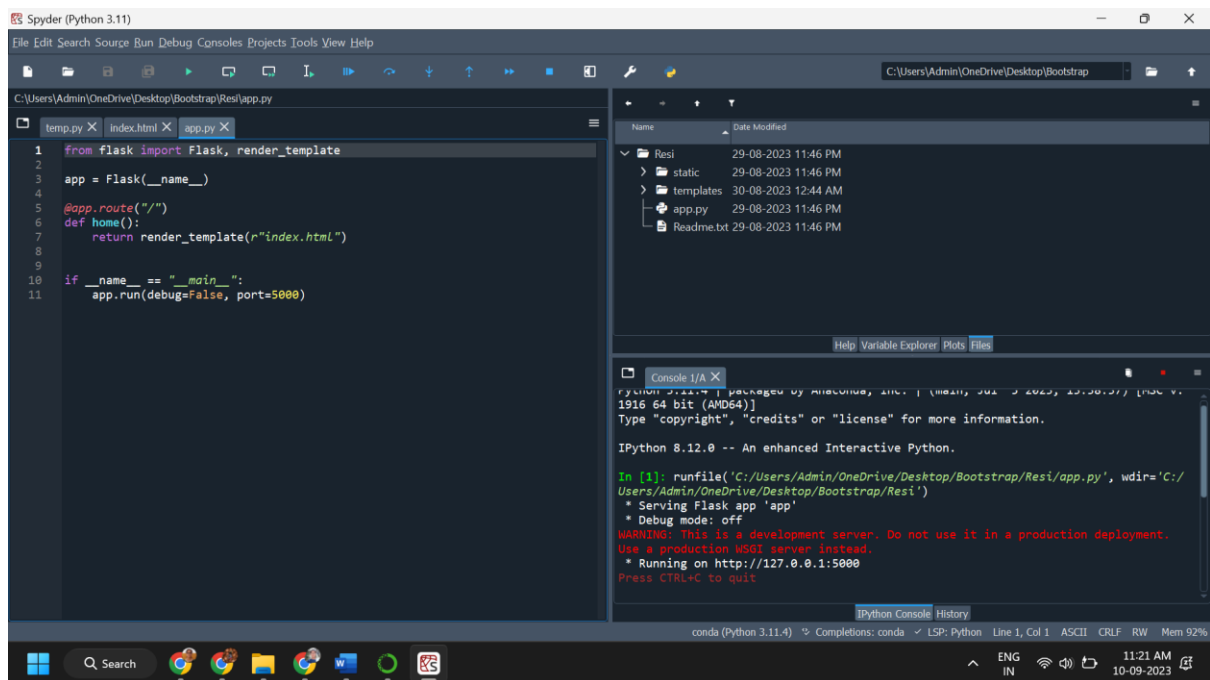
Imported the index.html file from resi folder from Bootstrap Folder

C:\Users\Admin\OneDrive\Desktop\Bootstrap

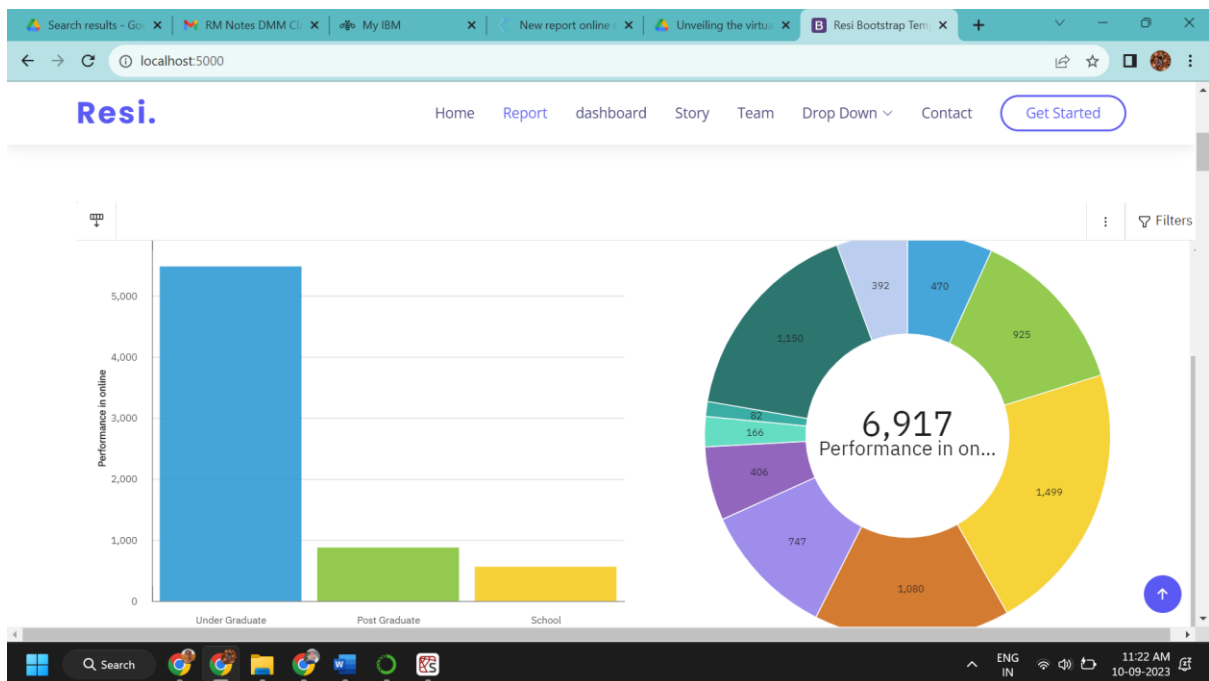
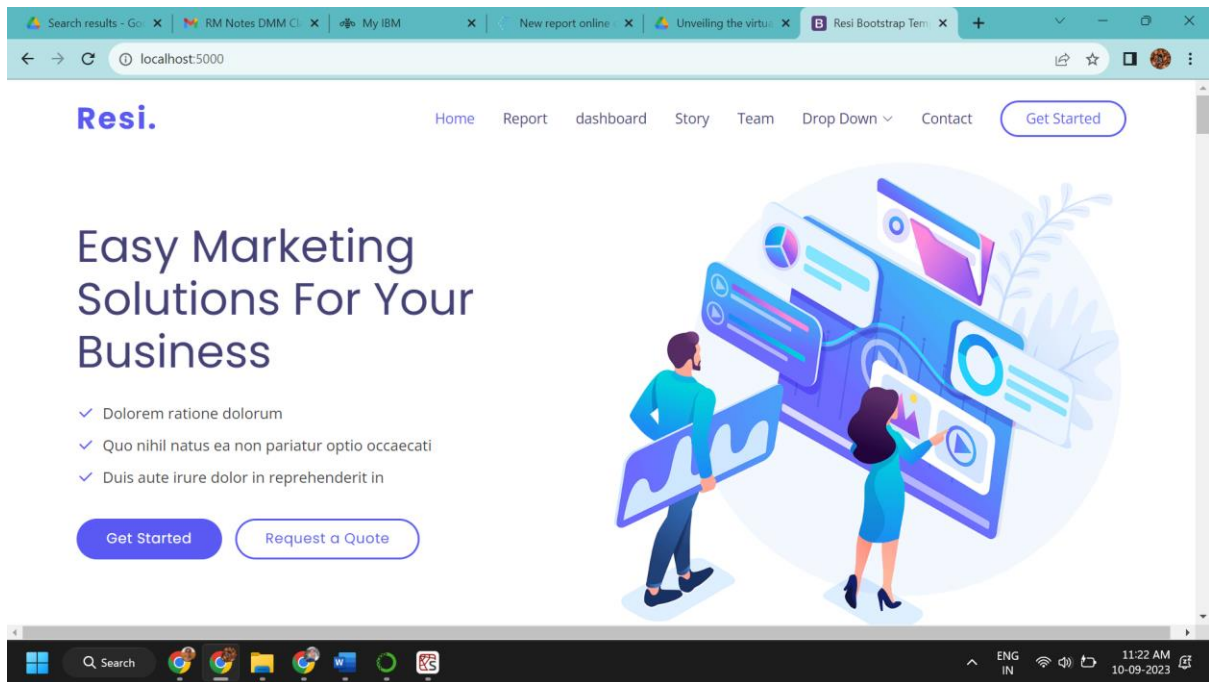
Then I have customized the header and sub contents by replacing the code in index.html file in spyder.



After that, done the necessary inputs in `app.py` and then executed the run



Next, opened google chrome and <http://localhost:5000/>



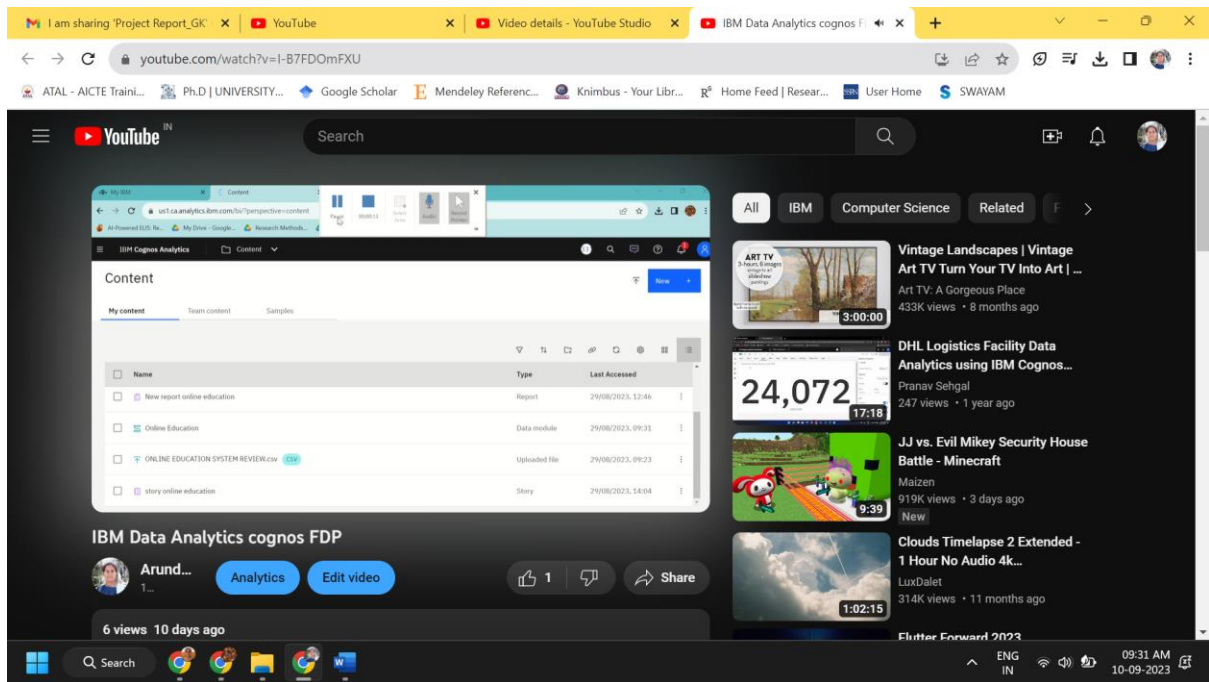
Successfully Integrated the web

10. Project Demonstration & Documentation

a. Record explanation Video for project end to end solution

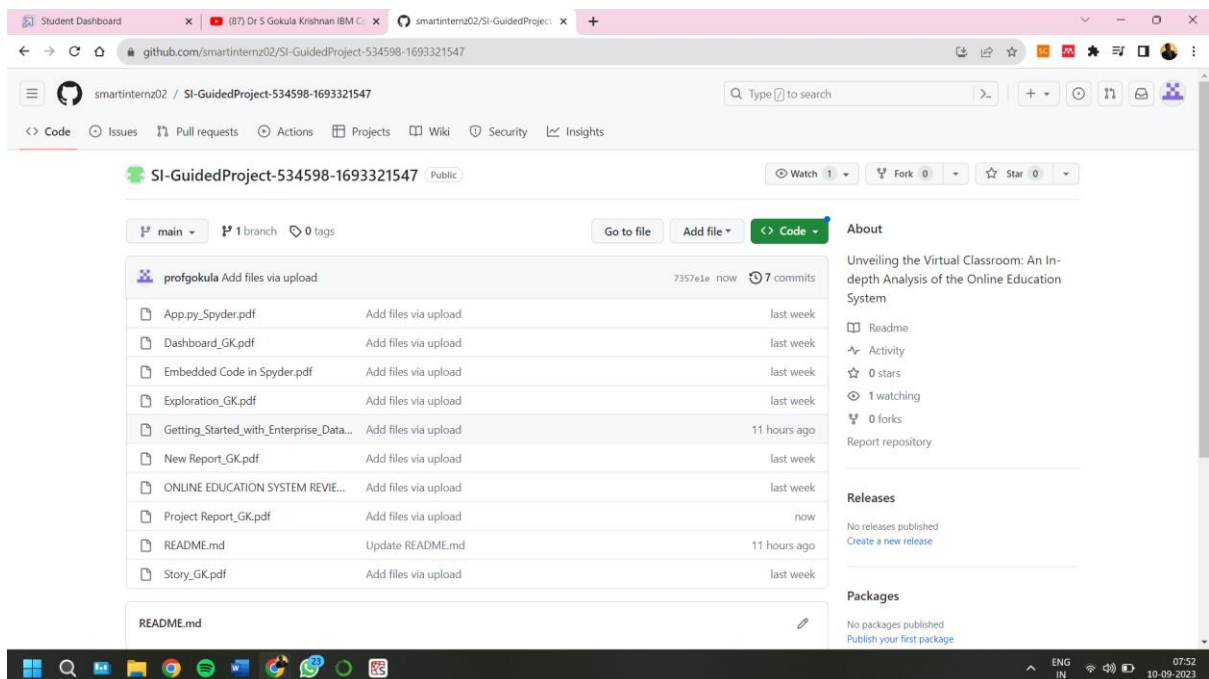
Demo Link Has been created for project end to end solution and link has been uploaded in you tube for public view

<https://youtu.be/I-B7FDOmFXU>

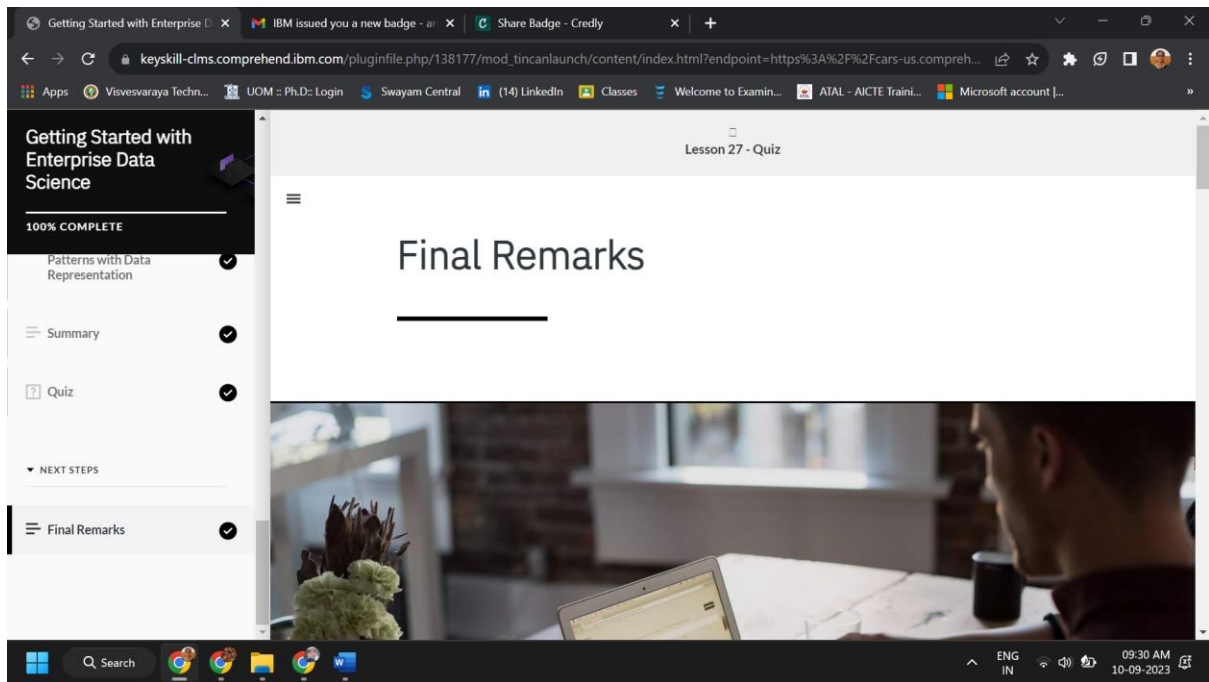


Next I have uploaded all the documents and required links to gitup link and collaborated with smartinternz

<https://github.com/smartinternz02/SI-GuidedProject-534598-1693321547>



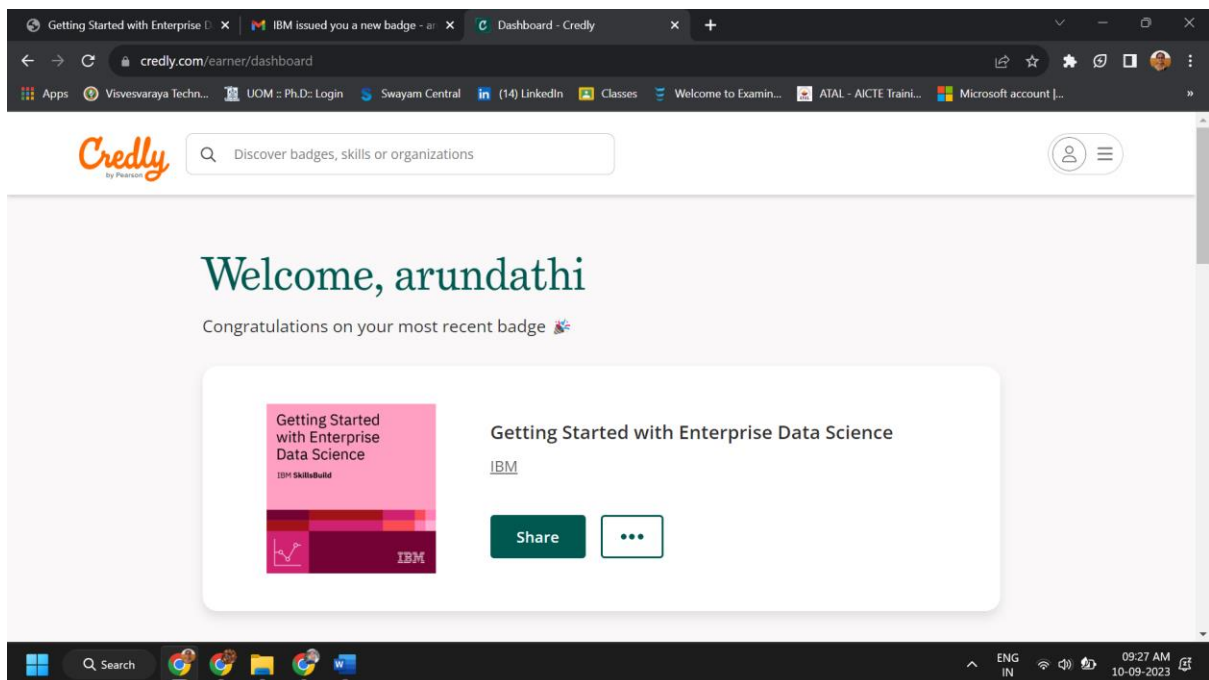
IBM Badges also attain and same has been uploaded in forms

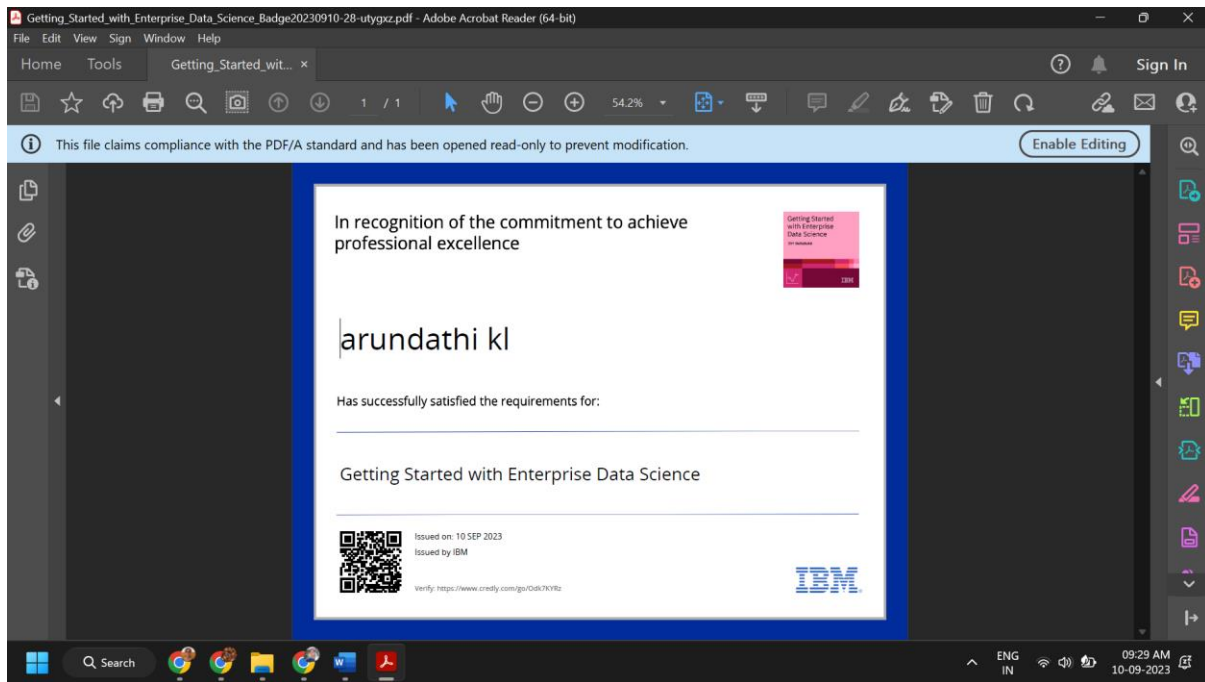


https://www.credly.com/badges/9e289b4d-9c9e-45ed-93bb-c7cefe37c2bb/public_url

Code:

```
<div data-iframe-width="150" data-iframe-height="270" data-share-badge-id="9e289b4d-9c9e-45ed-93bb-c7cefe37c2bb" data-share-badge-host="https://www.credly.com"></div><script type="text/javascript" async src="//cdn.credly.com/assets/utilities/embed.js"></script>
```





b. Project Documentation-Step by step project development procedure

Complete report has been submitted to gitup.

References

- Anderson, T. (2008). Towards a theory of online learning. *Theory and Practice of Online Learning*, 2, 45-74.
- Artino, A. R. (2008). Motivational beliefs and perceptions of instructional quality: Predicting satisfaction with online training. *Journal of Computer Assisted Learning*, 24(3), 260-270.
- Baker, R. (2017). *Educational technology: Learning powered by technology*. Harvard Education Press.
- Ertmer, P. A., Ottenbreit-Leftwich, A. T., Sadik, O., Sendurur, E., & Sendurur, P. (2012). Teacher beliefs and technology integration practices: A critical relationship. *Computers & Education*, 59(2), 423-435.
- Fetzner, M. J. (2013). Student autonomy in asynchronous online courses: Autonomy is still important. *International Review of Research in Open and Distance Learning*, 14(3), 264-276.
- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74(1), 59-109.
- Garrison, D. R., Anderson, T., & Archer, W. (1999). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2-3), 87-105.
- Greenhow, C., & Chapman, A. (2020). The implications of digital technologies for education policy: National and global perspectives. *Educational Policy*, 34(2), 153-176.
- Johnson, R. D., Hornik, S., & Salas, E. (2018). An empirical examination of factors contributing to the creation of successful e-learning environments. *International Journal of Training and Development*, 22(1), 1-14.
- Junco, R., Merson, D., & Salter, D. W. (2011). The effect of gender, ethnicity, and income on college students' use of communication technologies. *Cyberpsychology, Behavior, and Social Networking*, 14(1-2), 73-80.

Kebritchi, M., Hirumi, A., & Bai, H. (2017). The effects of modern mathematics computer games on mathematics achievement and class motivation. *Computers & Education*, 113, 192-202.

Kizilcec, R. F., Pérez-Sanagustín, M., & Maldonado, J. J. (2020). Self-regulated learning strategies predict learner behavior and goal attainment in massive open online courses. *Computers & Education*, 150, 103821.

Kopcha, T. J., Ottenbreit-Leftwich, A., Jung, E., Baser, D., & Yılmaz Özden, Ş. (2013). Teacher professional development for technology integration: A model of instructional design. *Journal of Research on Technology in Education*, 46(2), 136-162.

Lowenthal, P. R., Dunlap, J. C., & Snelson, C. (2019). Investigating students' perceptions of instructors' real-time feedback in online courses. *Distance Education*, 40(1), 59-75.

Means, B., Bakia, M., & Murphy, R. (2013). *Learning online: What research tells us about whether, when and how*. Routledge.

Means, B., Bakia, M., & Murphy, R. (2013). *Learning online: What research tells us about whether, when and how*. Routledge.

Nasir, N. S., & Kayworth, T. R. (2015). Antecedents and consequences of privacy concerns in education: An empirical investigation. *Computers & Education*, 87, 193-207.

Penuel, W. R., & Gallagher, D. J. (2017). Creating equitable opportunities for English learners to develop ambitious mathematics and science identities. *American Educational Research Journal*, 54(3), 399-438.

Richardson, J. C., Maeda, Y., Lv, J., & Caskurlu, S. (2017). Social presence in relation to students' satisfaction and learning in the online environment: A meta-analysis. *Computers in Human Behavior*, 71, 402-417.

Rovai, A. P. (2002). Building sense of community at a distance. *The International Review of Research in Open and Distributed Learning*, 3(1), 1-16.

Siemens, G., & Gasevic, D. (2012). Guest editorial-Learning and knowledge analytics. *Educational Technology & Society*, 15(3), 1-2.

Tondeur, J., Forkosh-Baruch, A., Prestridge, S., Albion, P., & Edirisinghe, S. (2019). Responding to challenges in teacher professional development for technology integration in education. *Educational Technology & Society*, 22(3), 69-85.

Twenge, J. M., & Campbell, W. K. (2018). Associations between screen time and lower psychological well-being among children and adolescents: Evidence from a population-based study. *JAMA Pediatrics*, 172(11), 1024-1030.

Warschauer, M., & Matuchniak, T. (2010). New technology and digital worlds: Analyzing evidence of equity in access, use, and outcomes. *Review of Research in Education*, 34(1), 179-225.

Thank you for your support and guidance!

Happy Learning!

Arundathi K L