A large, abstract network graph is positioned on the left side of the slide. It consists of numerous small, semi-transparent colored dots (black, blue, orange, yellow, purple) connected by thin gray lines, forming a complex web-like structure.

CPSC 583

SMARTLAPREC

A LAPTOP RECOMMENDATION SYSTEM

GUIDED BY:

Prof. Anand Panangadan

TEAM MEMBERS:

Dhruti Dilipbhai Patel

Pratishtha Soni

Tushar Yadav

OVERVIEW

1. PROBLEM STATEMENT

Our project focuses on developing an expert recommendation system for laptops using Semantic Web technologies. Leveraging RDF and OWL, the system represents laptop specifications, user preferences, and budget constraints. Through SPARQL queries and semantic reasoning, the system dynamically generates personalized recommendations, providing users with tailored suggestions based on their unique preferences and requirements.

$$F = G \frac{m_1 m_2}{d^2}$$

$$\phi(x) = \frac{1}{\sqrt{\pi}} e^{\frac{(x-\mu)^2}{2\sigma^2}}$$

2. SOLUTION APPROACH

$$\frac{\partial^2 u}{\partial t^2} = c^2 \frac{\partial^2 u}{\partial x^2}$$

$$\frac{df}{dt} = \lim_{h \rightarrow 0} \frac{f(t+h) - f(t)}{h}$$

- Semantic Web
- Defining an ontology using RDF and OWL to represent laptop specifications, user preferences, and relationships within the domain.
- Representing laptop data and user profiles in RDF format, incorporating instances of the defined ontology.
- Adding Semantic reasoning by helping it understand more things about laptops and users. This way, it can figure out additional details and connections on its own, improving how it gives recommendations.
- Implementing SPARQL queries to retrieve relevant information from the RDF data store, allowing the system to generate recommendations based on user-specified criteria.
- Developing a user-friendly interface where users can input preferences and view personalized recommendations generated by the system.

3. DATASET

AutoSave		ON	Home	Insert	Draw	Page Layout	Formulas	Data	Review	View	Automate	Data Mining	Analytic Solver	Tell me	Comments	Share	
Paste	Copy	Cut	Format Cells	Format Selection	Format Painter	Font	Font Size	Font Color	Font Style	Text Direction	Wrap Text	General	Conditional Formatting	Insert	Sort & Filter	Sensitivity	
Calibri (Body)	12	A	B	I	U	Font	Font Size	Font Color	Font Style	Text Direction	Wrap Text	General	Format as Table	Format Styles	Format	Analyze Data	
Merge & Center	Left	Right	Top	Bottom	Top Left	Top Right	Bottom Left	Bottom Right	Top Center	Bottom Center	Center	\$	%	0.00	0.00	100%	
L7	x	y	f(x)	intel													
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	id	brand	model	ram	hd_type	hd_size	screen_size	price	processor	processor_model	clock_speed	graphic_card_brand	graphic_card_name	os	weight	comment	
2	1	Dell	Inspiron 15-3567	4 hdd	1024	15.6	40000	intel	i5		2.5	intel		linux	2.5		
3	2	Apple	MacBook Air	8 ssd	128	13.3	55499	intel	i5		1.8	intel		2 mac	1.35		
4	3	Apple	MacBook Air	8 ssd	256	13.3	71500	intel	i5		1.8	intel		2 mac	1.35		
5	4	Apple	MacBook Pro	8 ssd	128	13.3	96890	intel	i5		2.3	intel		2 mac	3.02		
6	5	Apple	MacBook Pro	8 ssd	256	13.3	112666	intel	i5		2.3	intel		2 mac	3.02		
7	6	Apple	MacBook Pro (TouchBar)	16 ssd	512	15	226000	intel	i7		2.7	intel		2 mac	2.5		
8	7	Apple	MacBook Pro (TouchBar)	16 ssd	512	13.3	158000	intel	i5		2.9	intel		2 mac	1.37		
9	8	Apple	MacBook	8 ssd	256	12	96990	intel	core m		1.2	intel		2 mac	0.92		
10	9	Dell	Vostro 3468	4 hdd	1024	14	33225	intel	i3		2.4	intel		linux	1.76	Integrated Graphics	
11	10	Dell	Inspiron 15.6 3552	4 hdd	500	15	21990	intel	pentium N3710		1.6	intel		linux	2.19	Integrated Graphics	
12	11	Dell	Vostro 3468	4 hdd	1024	14	35925	intel	i3		2.4	intel		windows	1.76	Integrated Graphics	
13	12	Dell	Inspiron 14 3442	4 hdd	500	14	30900	intel	i3		1.7	intel		linux	3.1	Integrated Graphics	
14	13	Dell	Inspiron 15 3567	4 hdd	1024	15.6	35990	intel	i3		2.3	intel		windows	3.24	Integrated Graphics	
15	14	Dell	Vostro 3568	4 hdd	500	15.6	24900	intel	Celeron 3855U		1.6	intel		linux	2.5	Integrated Graphics	
16	15	Dell	Inspiron 15 3565	4 hdd	500	15	20990	amd	E2		1.8	amd		linux	2.3	Integrated Graphics	
17	16	Acer	Predator Helios 300	16 ssd	1024	15.6	101839	intel	i7		2.8	nvidia		windows	2.7	Gaming Laptop	
18	17	Dell	Latitude 3480	4 hdd	500	14	28870	intel	i3		2	intel		linux	1.8	Integrated Graphics	
19	18	Acer	Nitro 5	8 ssd	256	15.6	72784	amd	FX 9830P		3	amd		4000 windows	2.7		
20	19	Dell	Inspiron 5559	4 hdd	1024	15.6	34980	intel	i3		2.3	intel		windows	2.5	Integrated Graphics	
21	20	Acer	Aspire E5- 575G- 51VA	8 hdd	1024	15.6	50331	intel	i5		2.3	nvidia		linux	2.7		
22	21	Acer	Aspire F 15	8 hdd	1024	15.6	59898	intel	i5		2.8	nvidia		4 windows	2.3		
23	22	Dell	Inspiron 11 3148	4 hdd	500	11.6	25990	intel	i3		1.9	intel		windows	1.4	Integrated Graphics	
24	23	Acer	E5-574G	8 hdd	1024	15.6	53499	intel	i5		2.3	nvidia		2 windows	2.4		
25	24	Dell	Inspiron 15 5555	8 hdd	1024	15.6	38590	amd	A10-8700P		3.2	amd		windows	3.6	Integrated Graphics	
26	25	Acer	Aspire NX.M8NSI.007	4 ssd	60	11.6	68999	intel	i3		1.4	intel		windows	1.4	Integrated Graphics	
27	26	Dell	Inspiron-15 5548	8 hdd	1024	15.6	38990	intel	i5		2.7	amd		2 windows	3.2		
28	27	Acer	Spin 7 SP714-51	8 hdd	256	14	124900	intel	i7		3.6	intel		windows	1.2	Integrated Graphics	
29	28	Acer	SF314-51	4 hdd	256	14	74797	intel	i5		2.5	intel		windows	1.5	Integrated Graphics	
30	29	Acer	Swift 7 SF713-51	8 ssd	256	13.3	80940	intel	i5		3.2	intel		windows	1.125	Integrated Graphics	
31	30	Acer	Aspire F5 572G	8 hdd	1024	15.6	50680	intel	i7		2.5	intel		2 linux	2.4		
32	31	Acer	ASPIRE V NITRO	12 hdd	1024	15.6	105300	intel	i7		2.6	nvidia		4 windows	2.4		
33	32	Acer	Predator 17	16 ssd	256	17.3	178912	intel	i7		2.6	nvidia		windows	4.2	Integrated Graphics	
34	33	Acer	Aspire-V VN7-591G	12 hdd	1024	15.6	105510	intel	i7		2.6	nvidia		1 windows	2.4		
35	34	Acer	Swift 3	8 ssd	256	14	69999	intel	i5		3.1	intel		windows	1.525	Integrated Graphics	
														The Best Gaming is on GeForce Discover desktop-			

4 . P R O G R A M M I N G L A N G U A G E

- **Python** - Programming Language
- **SPARQL** - Query Language
- **RDFlib** - Python library for working with RDF data
- **Tkinter** - Python library for creating simple GUI for selecting and viewing user profiles and recommendations

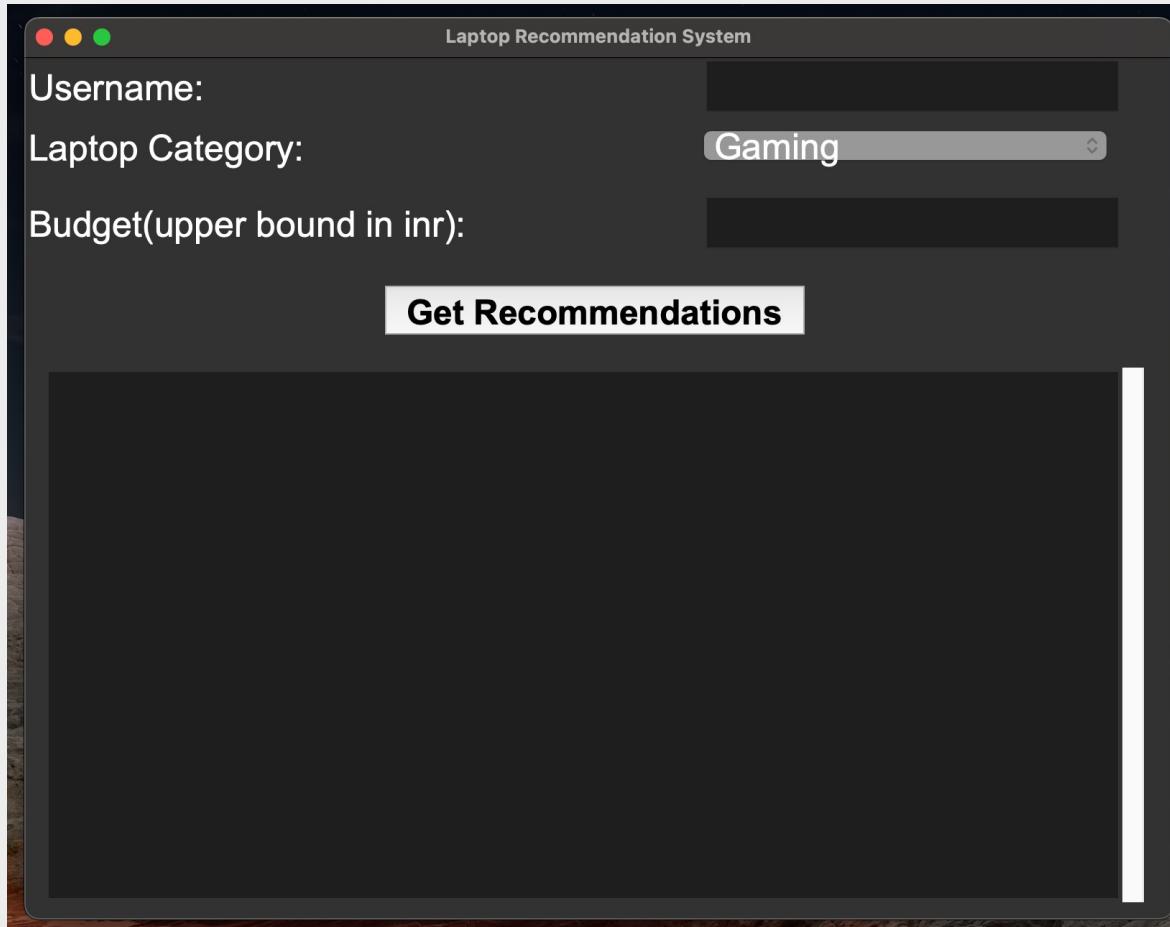
5. LESSON LEARNED

- **Semantic Web Technologies**
- **Personalization with SPARQL Queries**
- **Dynamic Recommendation Generation**
- **User-Centric Design**
- **Semantic Reasoning**

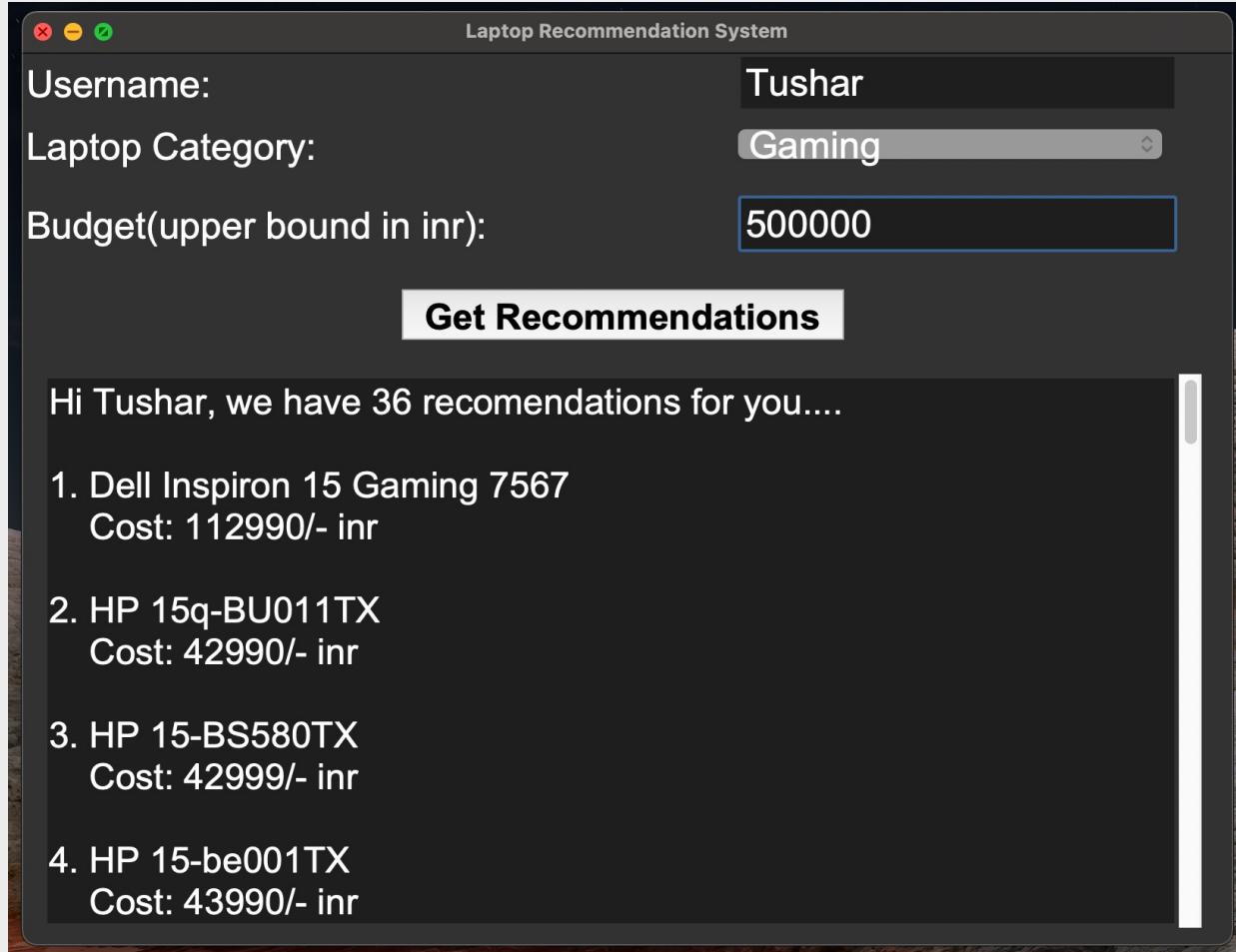
CODE DEMO

```
226
227 .sticky {
228     margin-bottom: 50px;
229 }
230
231 .sticky .content-inner {
232     margin-bottom: 0px!important;
233     padding-bottom: 0px!important;
234     border-bottom: 0px!important;
235     -o-box-shadow: 0 1px 2px rgba(0,0,0,.2);
236     -moz-box-shadow: 0 1px 2px rgba(0,0,0,.2);
237     -webkit-box-shadow: 0 1px 2px rgba(0,0,0,.2);
238     box-shadow: 0 1px 2px rgba(0,0,0,.2);
239     background-color: #fff;
240     padding: 25px!important;
241     position: relative;
242 }
243
244 .side-box {
245     padding: 10px 0;
246     margin-bottom: 10px;
247     border: 1px solid #CCC;
248     background-color: #E6E6E6;
249     text-align: center;
250 }
251
252 .side-box a:link,
253 .side-box a:visited {
254     color: inherit;
255     text-decoration: none;
256 }
```

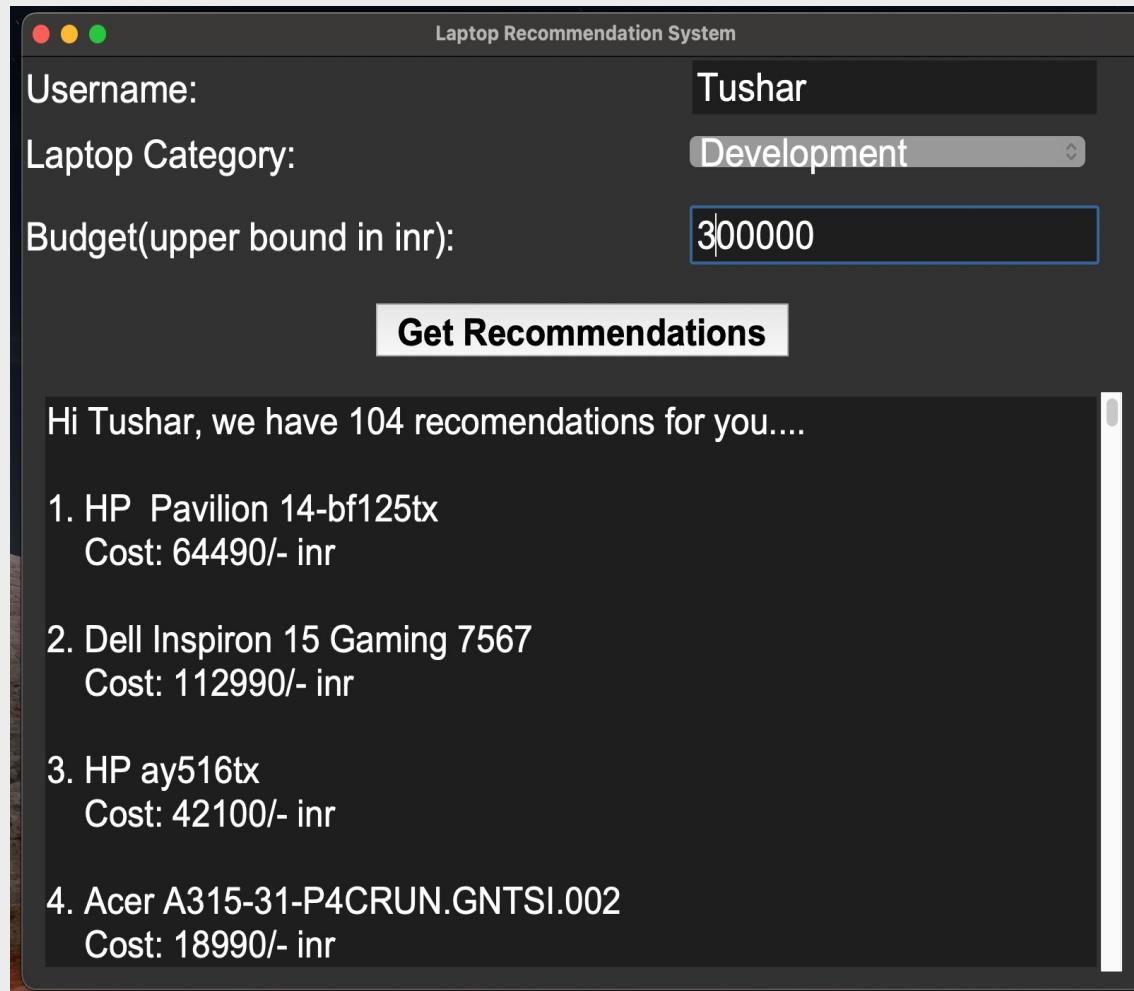
1. USER INTERFACE



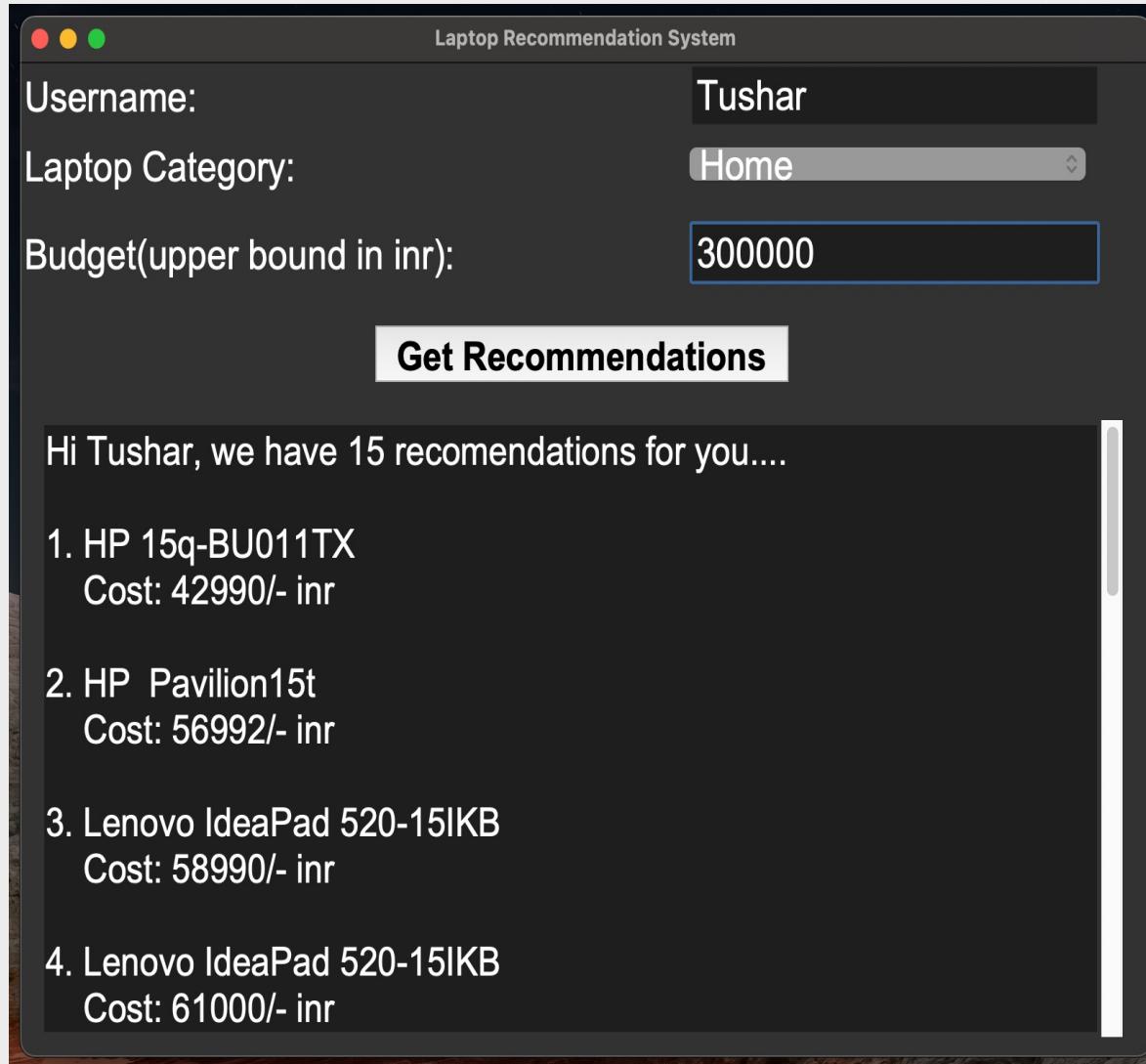
2. GAMING LAPTOP RECOMMENDATION



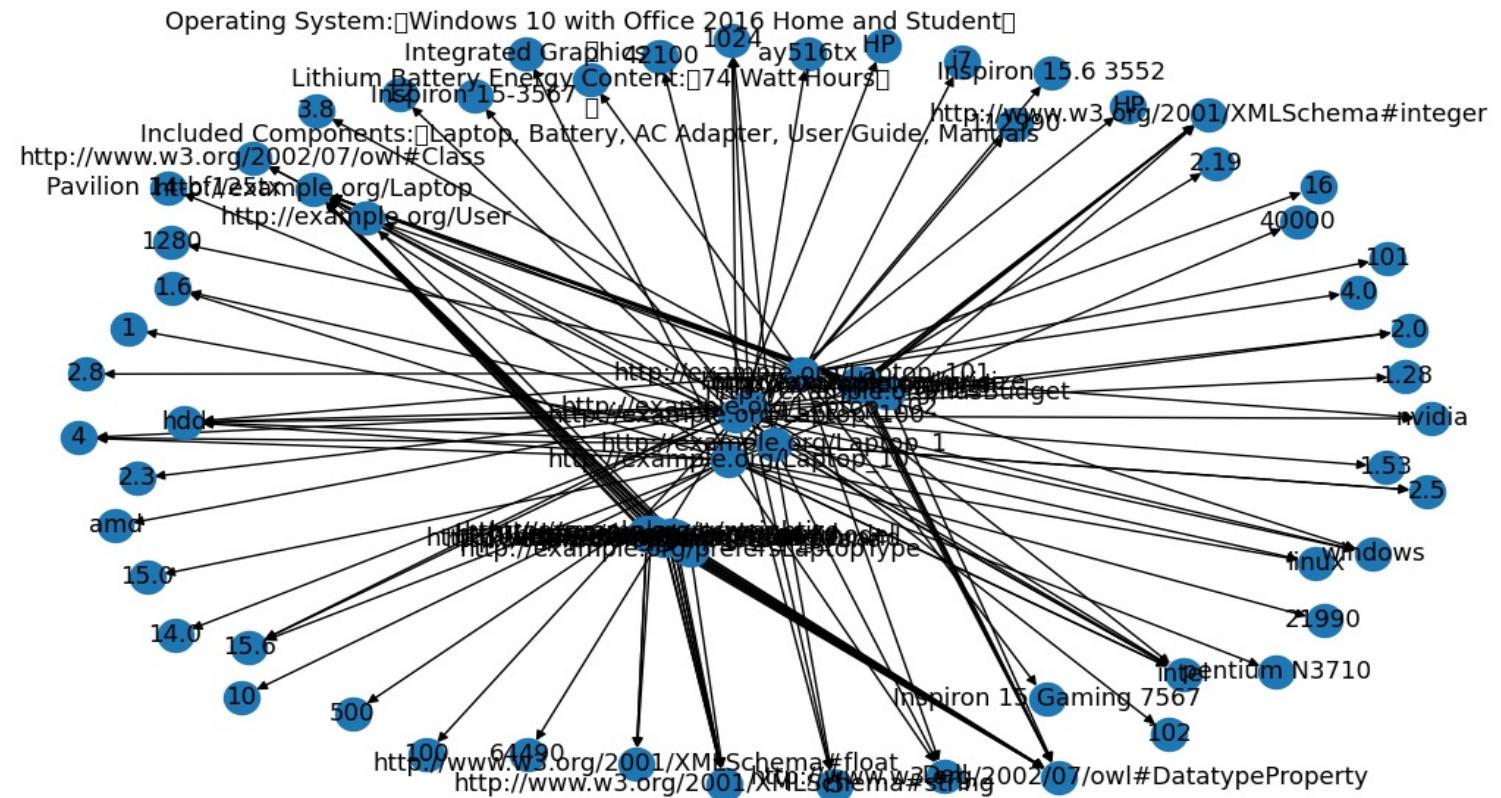
3. DEVELOPMENT LAPTOP RECOMMENDATION



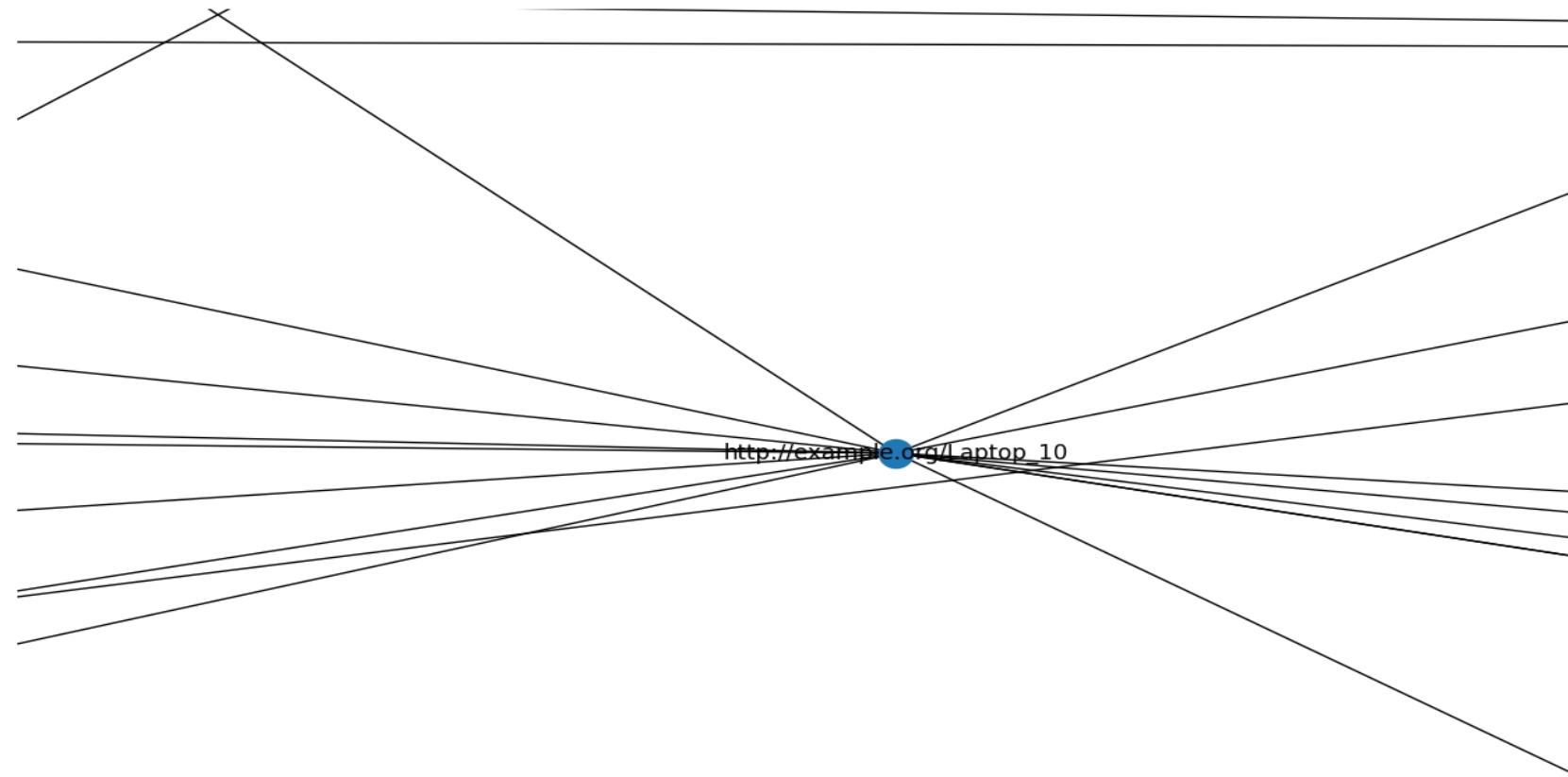
4. HOME LAPTOP RECOMMENDATION



5. GRAPH VISUALISATION



6. SINGLE NODE VISUALIZATION



7. CODE REPOSITORY

GUTHUB LINK: *<https://github.com/YTushar18/SmartLapRec>*



THANK YOU

We are open for Q & A :)