

**A Laboratory Manual for**  
**Internetwork security and Web**  
**analytics (3171616)**

**B.E. Semester 7**  
**(Information Technology)**



**L. D. College of Engineering**



**Directorate of Technical Education, Gandhinagar,**  
**Gujarat**

## **L.D. College of Engineering, Ahmedabad**

### **Certificate**

This is to certify that Mr. Khokhar Yug Rajubhai Enrollment No. **200280116059** of B.E. Semester 7 Information Technology Department of this Institute (GTU Code:28) has satisfactorily completed the Practical / Tutorial work for the subject **Internetwork security and Web analytics (3171616)** for the academic year 2023-24.

Place: Ahemdabad

Date: \_\_\_\_\_

**Name and Sign of Faculty member**

**Head of the Department**

## Preface

Main motto of any laboratory/practical/field work is for enhancing required skills as well as creating ability amongst students to solve real time problem by developing relevant competencies in psychomotor domain. By keeping in view, GTU has designed competency focused outcome-based curriculum for engineering degree programs where sufficient weightage is given to practical work. It shows importance of enhancement of skills amongst the students and it pays attention to utilize every second of time allotted for practical amongst students, instructors and faculty members to achieve relevant outcomes by performing the experiments rather than having merely study type experiments. It is must for effective implementation of competency focused outcome-based curriculum that every practical is keenly designed to serve as a tool to develop and enhance relevant competency required by the various industry among every student. These psychomotor skills are very difficult to develop through traditional chalk and board content delivery method in the classroom. Accordingly, this lab manual is designed to focus on the industry defined relevant outcomes, rather than old practice of conducting practical to prove concept and theory.

By using this lab manual students can go through the relevant theory and procedure in advance before the actual performance which creates an interest and students can have basic idea prior to performance. This in turn enhances pre-determined outcomes amongst students. Each experiment in this manual begins with competency, industry relevant skills, course outcomes as well as practical outcomes (objectives). The students will also achieve safety and necessary precautions to be taken while performing practical.

This manual also provides guidelines to faculty members to facilitate student centric lab activities through each experiment by arranging and managing necessary resources in order that the students follow the procedures with required safety and necessary precautions to achieve the outcomes. It also gives an idea that how students will be assessed by providing rubrics.

Internet security helps in identifying security points and helps in identifying the protocols where security is deployed. Web Analytics helps in identifying online/offline patterns and trends of web traffic. It is used to collect, measure, report, and analyze website data. Web analytics tracks key metrics and analyze visitors' activity and traffic flow. It provides a platform for students to analyze the performance of a website and optimize its web usage.

Utmost care has been taken while preparing this lab manual however always there is chances of improvement. Therefore, we welcome constructive suggestions for improvement and removal of errors if any.

**DTE's Vision**

- To provide globally competitive technical education
- Remove geographical imbalances and inconsistencies
- Develop student friendly resources with a special focus on girls' education and support to weaker sections
- Develop programs relevant to industry and create a vibrant pool of technical professionals

**Institute's Vision**

To contribute for sustainable development of nation through achieving excellence in technical education and research while facilitating transformation of students into responsible citizens and competent professionals.

**Institute's Mission**

- To impart affordable and quality education in order to meet the needs of industries and achieve excellence in teaching-learning process.
- To create a conducive research ambience that drives innovation and nurtures research-oriented scholars and outstanding professionals.
- To collaborate with other academic & research institutes as well as industries in order to strengthen education and multidisciplinary research.
- To promote equitable and harmonious growth of students, academicians, staff, society and industries, thereby becoming a center of excellence in technical education.
- To practise and encourage high standards of professional ethics, transparency and accountability.

**Department's Vision**

To shape the young minds of aspiring Information Technology engineers to become the front runner in the sustainable technological growth of our country, conserving its rich cultural heritage and catering to its socioeconomic needs.

**Department's Mission**

- Bringing innovative approach in teaching-learning process to produce competent Information Technology engineers.
- Provide opportunities and necessary exposure to the young engineers to develop themselves into responsible professionals.
- Infusing lifelong learning ability in the aspiring minds with the view of making them sensible towards their social responsibilities.

## Programme Outcomes (POs)

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

### **Program Educational Objectives (PEOs)**

1. Pursue a professional career in the field of Information Technology Engineering and excel in it.
2. Enhance their knowledge by continuing higher education and research.
3. Work as torch bearer in a multidisciplinary environment to bring innovation and to improvise the existing technology as entrepreneurs.
4. Keep pace with cutting edge scenario of the field with the view of contributing to the social and environmental needs in efficient ways.

### **Program Specific Outcomes (PSOs)**

- Apply the detailed knowledge of code optimization to complex application problems.
- Write programs with strong skill set with standard coding practices.
- Assess risk and vulnerability through standard security practices.

**Practical – Course Outcome matrix**

<b>Course Outcomes (COs):</b> <b>1) Differentiate the security aspects in lower and upper-layer protocols.</b> <b>2) Explain the parameters, metrics and reports involved in analysis of website, blogs, search engine.</b> <b>3) Explain the measurement of analytics parameters involved in E-mail.</b> <b>4) Implement the test strategy for web site testing.</b>					
Sr. No.	Objective(s) of Experiment	CO1	CO2	CO3	CO4
	Consider the college web site or department web site for all the experiments given below and Use web analytics to (1 to 8)				
1.	Track engagement with home page and other site content.		√		
2.	Measure the time taken to load home page and other pages.		√		
3.	Perform A/B testing.				√
4.	Use cookies to store username.		√		
5.	Write content so that users come back to the site.		√		
6.	Build your keyword list (a list or spreadsheet of attainable, relevant keywords), write content around those keywords and track performance and rankings.		√		
7.	Find the blogs which takes people to this site.		√		
8.	Try password attack to check the site is not vulnerable to this attack.				√
9.	Measure the Most Important Metrics used for E-mail Marketing Analytics.			√	

## Industry Relevant Skills

The following industry relevant competency are expected to be developed in the student by undertaking the practical work of this laboratory.

1. Will be able to be Familiar with web analytics tools such as Google Analytics, Adobe Analytics, and IBM Digital Analytics.
2. Will be able to Understanding how to perform vulnerability scans and penetration tests to identify and remediate security weaknesses.

## Guidelines for Faculty members

1. Teacher should provide the guideline with demonstration of practical to the students with all features.
2. Teacher shall explain basic concepts/theory related to the experiment to the students before starting of each practical
3. Involve all the students in performance of each experiment.
4. Teacher is expected to share the skills and competencies to be developed in the students and ensure that the respective skills and competencies are developed in the students after the completion of the experimentation.
5. Teachers should give opportunity to students for hands-on experience after the demonstration.
6. Teacher may provide additional knowledge and skills to the students even though not covered in the manual but are expected from the students by concerned industry.
7. Give practical assignment and assess the performance of students based on task assigned to check whether it is as per the instructions or not.
8. Teacher is expected to refer complete curriculum of the course and follow the guidelines for implementation.

## Instructions for Students

1. Students are expected to carefully listen to all the theory classes delivered by the faculty members and understand the COs, content of the course, teaching and examination scheme, skill set to be developed etc.
2. Students shall organize the work in the group and make record of all observations.
3. Students shall develop maintenance skill as expected by industries.
4. Student shall attempt to develop related hand-on skills and build confidence.
5. Student shall develop the habits of evolving more ideas, innovations, skills etc. apart from those included in scope of manual.
6. Student shall refer technical magazines and data books.
7. Student should develop a habit of submitting the experimentation work as per the schedule and s/he should be well prepared for the same.

## Common Safety Instructions

Students are expected to

- 1) switch on the PC carefully (not to use wet hands)
- 2) shutdown the PC properly at the end of your Lab
- 3) carefully Handle the peripherals (Mouse, Keyboard, Network cable etc)
- 4) Use Laptop in lab after getting permission from Teacher



## Index (Progressive Assessment Sheet)

Sr. No.	Objective(s) of Experiment	Page No.	Date of performance	Date of submission	Assessment Marks	Sign. of Teacher with date
	Consider the college web site or department web site for all the experiments given below and Use web analytics to					
1.	Track engagement with home page and other site content.					
2.	Measure the time taken to load home page and other pages					
3.	Perform A/B testing					
4.	Use cookies to store username.					
5.	Write content so that users come back to the site					
6.	Build your keyword list (a list or spreadsheet of attainable, relevant keywords), write content around those keywords and track performance and rankings.					
7.	Find the blogs which takes people to this site.					
8.	Try password attack to check the site is not vulnerable to this attack.					
9.	Measure the Most Important Metrics used for E-mail Marketing Analytics.					
Total						

## Experiment No: 1

### Track engagement with home page and other site content

**Date:**

**Competency and Practical Skills:** Basic knowledge regarding Information and Network security, Web analytics.

**Relevant CO:** CO2

**Objectives:** (a) To familiarize learners with the google analytics tool.  
(b) To identify popular content and topics that are resonating with their audience.

**Equipment/Tools Required:** Personal Computer, Google Analytics, Internet.

**Theory:**

#### What is User Engagement?

User engagement is a broad term that refers to how visitors interact with your website. The specific engagement metrics you'll want to track will vary depending on your business objectives and the tools you use.

How long do you stay on a web page before you decide if it has what you need? Not long, right? Site owners have a matter of seconds to grab a searcher's attention and convince them to stay.

If you've already crafted SEO content that brings people to your site, the next challenge is to make sure it's compelling enough to get them to stay. Today's consumers want instant gratification. Ten years ago, you might have had as much as 10 seconds to hook a visitor, but now, the amount of time someone spends deciding if they'll stay on a page or move on is closer to 50 milliseconds. If they visit a page and aren't immediately interested in what they see, 40% of visitors will move on.

Keeping visitors interested in what you have to offer is a crucial part of your success. That's why you'll want to develop an effective engagement strategy.

#### 8 Website Engagement Metrics to Track

Exactly which engagement metrics you choose to track will depend on your business objectives and goals. Regardless of your particular area of focus, here are some standard metrics that can help you measure how people interact with your website content:

##### 1. Bounce Rate

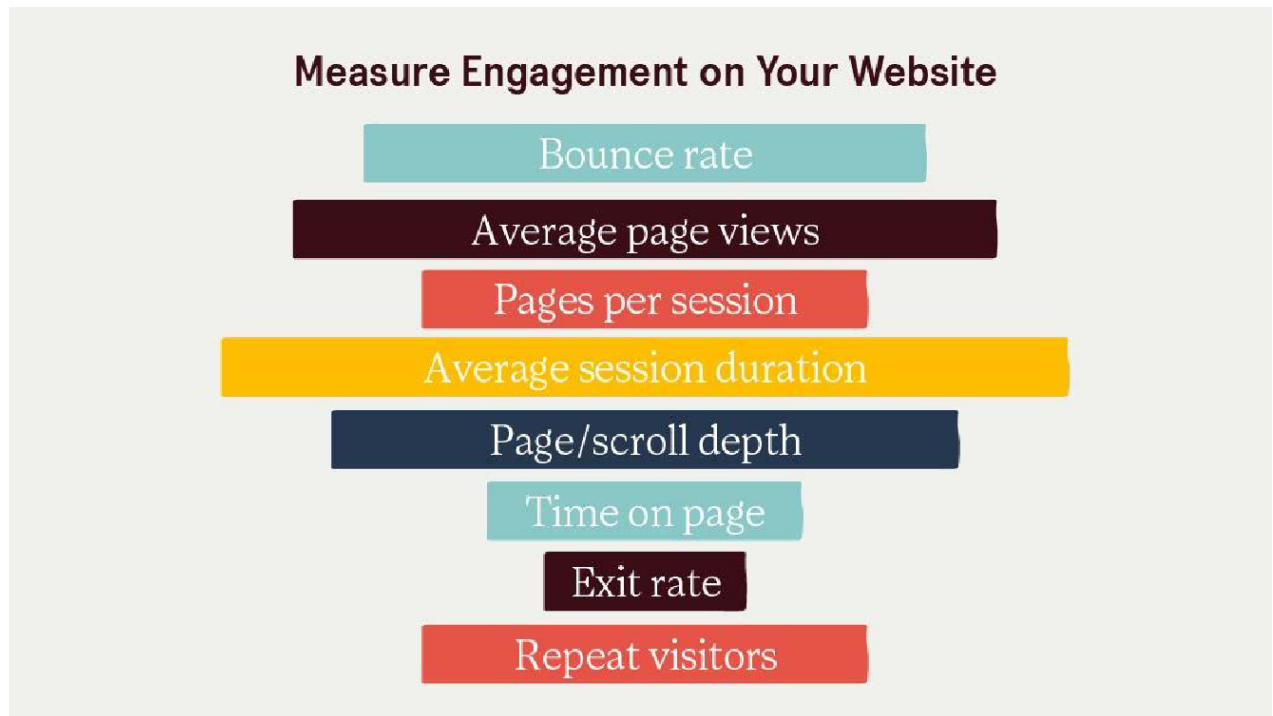
The bounce rate reveals how many people land on your web page and leave without taking any further action. A high bounce rate could result from slow load times, too many interstitial pop-ups, poor design, or thin content that's heavy on keywords and light on value.

Bounce rates indicate how well your website is serving your audience. If people find relevant information that answers their questions, they'll explore more of your content. The deeper

visitors go into your site, the more likely they are to convert (whether during their first session or on a return visit).

## 2. Page views

Page views represent each time a page on your website is loaded by users. This metric can help you see patterns in traffic and which pages are attracting the most visitors. Not to be confused with landing page visits, page views count visits from both internal and external pages. Pages that garner the most views are where you'll want to place calls to action.



## 3. Session Duration

A session comprises all the interactions one user has with your website from the time they land on your site to the moment they leave or become inactive (and the session ends). In short, session duration is the amount of time someone spends on your site in one visit. Longer session durations indicate better user engagement.

Average session duration tracks the average length of sessions on your website. Likely, someone who spends a long time on your site found the information they need and is looking to learn more. This metric enables you to see if your website content as a whole is resonating with your audience.

## 4. Pages Per Session

The pages per session metric is the average number of pages someone views in a single session. A higher number can indicate that users find your website compelling and easy to navigate. However, if your pages per session are high, but your session duration is low, visitors might be clicking through your pages because they're having trouble finding what they need. Learning how many pages people view in a single session can help you understand whether your internal linking strategy guides people through your sales funnel effectively.

## 5. Time on Page

Measuring the amount of time someone spends on each web page is an effective indicator of how engaging your content is. Set expectations for each page based on the content it contains. If your average time on the page is exceedingly short, your content may be thin or irrelevant, failing to engage the visitors that land there. Make sure your target keywords and metadata align with your page content and provide a good user experience (UX), so you can meet your visitors' expectations.

### 6. Page/Scroll Depth

This metric shows you how far down the page users are scrolling and reading (or skimming). The further users scroll down a page, the more content they're consuming. Identifying where users stop scrolling and engaging with your content can help you make necessary changes to optimize your pages further and boost interactions. Combining this metric with time on page can give you a good idea of how engaging your web pages are.

### 7. Site Abandonment

When people land on your website and leave before converting, it's essential to understand where you're losing them and dig into why it's happening. Assess your site to determine which pages people exit on. Knowing this can help you address the issues that are causing people to leave. Pages with high exit rates could indicate a user experience problem. You might be losing people's interest because of slow load times, broken links, or outdated content.

### 8. Repeat Visitors

One indicator of user engagement is the number of visitors that come back to your website. When people benefit from engaging with your brand, they'll continue returning for more content, resources, and repeat purchases. Since approximately 70% of consumers comparison shop before choosing a product to purchase, you can expect that the more often someone returns to your site, the more likely they are to become a customer eventually.

### Procedure:

1. Sign in to your google account .
2. Create a web stream, add your website URL (home page or the page you want to track) and stream name.
3. After this, configure types of interaction you want to track by selecting them in "Enhanced measurement" section. Google analytics allows to measure 6 different kind of user interactions.
4. Then add the global code into the header of your site, or add the "Measurement id" in you sites.google analytics section.
5. After following above given steps, you will be able to track user engagement on your page

### Observations:

### How to track Bounce rate with Google Analytics

- To track this engagement metric, go to Google Analytics – Audience – Overview.



If you want to check the bounce rate per traffic channel goes to Acquisition -> All Traffic -> Channels.

Default Channel Grouping	Acquisition			Behavior
	Sessions ? ↓	% New Sessions ?	New Users ?	Bounce Rate ?
	164,308 % of Total: 100.00% (164,308)	68.94% Avg for View: 68.77% (0.25%)	113,279 % of Total: 100.25% (112,993)	40.45% Avg for View: 40.45% (0.00%)
1. Organic Search	53,877 (32.79%)	69.60%	37,498 (33.10%)	37.10%
2. Generic Paid Search	48,562 (29.56%)	68.08%	33,060 (29.18%)	45.54%
3. Direct	24,572 (14.95%)	72.88%	17,909 (15.81%)	44.21%
4. Social	13,429 (8.17%)	79.51%	10,677 (9.43%)	40.74%
5. (Other)	12,800 (7.79%)	70.21%	8,987 (7.93%)	37.12%
6. Branded Paid Search	7,153 (4.35%)	38.49%	2,753 (2.43%)	22.96%
7. Referral	2,203 (1.34%)	59.78%	1,317 (1.16%)	35.91%
8. Paid Search	1,593 (0.97%)	60.95%	971 (0.86%)	49.34%
9. Display	119 (0.07%)	89.92%	107 (0.09%)	48.74%

That way you can see that traffic coming from “Paid search” (49.34%) has a much higher bounce rate than “organic search” (37.10%). Then you can take action to find out why. In case you want to check out your bounce rate by exact source go to Acquisition -> All Traffic -> Source/medium.

Source / Medium ?	Acquisition			Behavior
	Sessions ? ↓	% New Sessions ?	New Users ?	Bounce Rate ?
	164,308 % of Total: 100.00% (164,308)	68.94% Avg for View: 68.77% (0.25%)	113,279 % of Total: 100.25% (112,993)	40.45% Avg for View: 40.45% (0.00%)
1. google / cpc	55,828 (33.98%)	64.34%	35,917 (31.71%)	42.63%
2. google / organic	52,049 (31.68%)	69.58%	36,216 (31.97%)	37.24%
3. (direct) / (none)	24,572 (14.95%)	72.88%	17,909 (15.81%)	44.21%
4. fb / fbdesktop	8,323 (5.07%)	86.10%	7,166 (6.33%)	32.02%
5. m.facebook.com / referral	5,831 (3.55%)	91.43%	5,331 (4.71%)	42.94%
6. facebook.com / social	4,444 (2.70%)	68.54%	3,046 (2.69%)	43.95%
7. xfxSURHmTk / (not set)	2,952 (1.80%)	14.87%	439 (0.39%)	47.90%
8. facebook.com / referral	2,144 (1.30%)	72.20%	1,548 (1.37%)	27.10%
9. mucca / cpc	1,526 (0.93%)	61.07%	932 (0.82%)	48.95%
10. fb / instagram	1,352 (0.82%)	95.71%	1,294 (1.14%)	42.16%

Another way you can measure bounce rate is by landing page. That way you can see which ones are contributing to your high bounce rate so you can fix them. Go to Behavior –> Behavior Flow -> Site Content -> Landing pages

### How to track time on site with Google Analytics

- Go to Audience -> Overview to see the avg. session duration for your website.

Landing Page ?	Acquisition			Behavior
	Sessions ? ↓	% New Sessions ?	New Users ?	Bounce Rate ?
	164,308 % of Total: 100.00% (164,308)	68.94% Avg for View: 68.77% (0.25%)	113,279 % of Total: 100.25% (112,993)	40.45% Avg for View: 40.45% (0.00%)
1. /index.php	49,529 (30.14%)	70.98%	35,154 (31.03%)	24.68%
2. /adesivos-de-azulejos	22,343 (13.60%)	80.67%	18,025 (15.91%)	33.21%
3. /adesivos-de-parede-infantil	9,118 (5.55%)	79.75%	7,272 (6.42%)	42.36%
4. /adesivos-de-parede-cozinha	7,735 (4.71%)	71.88%	5,560 (4.91%)	31.95%
5. /adesivo-de-vidro-porta-box	5,634 (3.43%)	82.91%	4,671 (4.12%)	46.77%
6. /adesivo-de-azulejo-sartre	5,060 (3.08%)	76.25%	3,858 (3.41%)	65.71%
7. /revestimento-texturizado	3,754 (2.28%)	74.85%	2,810 (2.48%)	35.80%
8. /adesivos-de-parede-frases	2,477 (1.51%)	71.54%	1,772 (1.56%)	50.99%
9. /adesivos-de-parede-natureza	2,411 (1.47%)	65.62%	1,582 (1.40%)	37.54%
10. /adesivos-de-parede-sala	2,370 (1.44%)	85.49%	2,026 (1.79%)	47.55%

To track time on site by channel go to Acquisition -> All Traffic -> Channels.



- That way you can see that user engagement from “branded paid search” spends much more time on your site than the ones from “generic paid search”. To take things further you can check the time on the site for each traffic source. To do that go to Acquisition -> All traffic -> Source/medium.

Default Channel Grouping	Acquisition			Behavior		
	Sessions ? ↓	% New Sessions ?	New Users ?	Bounce Rate ?	Pages / Session ?	Avg. Session Duration ?
	164,308 % of Total: 100.00% (164,308)	68.94% Avg for View: 68.77% (0.25%)	113,279 % of Total: 100.25% (112,993)	40.45% Avg for View: 40.45% (0.00%)	5.86 Avg for View: 5.86 (0.00%)	00:04:00 Avg for View: 00:04:00 (0.00%)
1. Organic Search	53,877 (32.79%)	69.60%	37,498 (33.10%)	37.10%	6.10	00:04:15
2. Generic Paid Search	48,562 (29.56%)	68.08%	33,060 (29.18%)	45.54%	5.49	00:03:21
3. Direct	24,572 (14.95%)	72.88%	17,909 (15.81%)	44.21%	5.48	00:03:57
4. Social	13,429 (8.17%)	79.51%	10,677 (9.43%)	40.74%	5.94	00:03:50
5. (Other)	12,800 (7.79%)	70.21%	8,987 (7.93%)	37.12%	5.44	00:04:35
6. Branded Paid Search	7,153 (4.35%)	38.49%	2,753 (2.43%)	22.96%	8.88	00:05:58
7. Referral	2,203 (1.34%)	59.78%	1,317 (1.16%)	35.91%	5.80	00:04:18
8. Paid Search	1,593 (0.97%)	60.95%	971 (0.86%)	49.34%	4.61	00:03:40

Also, you should track time on site for each page of your site. That way you will know what page has your most engaging content and which posts lack engagement. To see that go to Behavior -> Site Content -> all pages.

Source / Medium ?	Acquisition			Behavior		
	Sessions ? ↓	% New Sessions ?	New Users ?	Bounce Rate ?	Pages / Session ?	Avg. Session Duration ?
	164,308 % of Total: 100.00% (164,308)	68.94% Avg for View: 68.77% (0.25%)	113,279 % of Total: 100.25% (112,993)	40.45% Avg for View: 40.45% (0.00%)	5.86 Avg for View: 5.86 (0.00%)	00:04:00 Avg for View: 00:04:00 (0.00%)
1. google / cpc	55,828 (33.98%)	64.34%	35,917 (31.71%)	42.63%	5.92	00:03:41
2. google / organic	52,049 (31.68%)	69.58%	36,216 (31.97%)	37.24%	6.07	00:04:14
3. (direct) / (none)	24,572 (14.95%)	72.88%	17,909 (15.81%)	44.21%	5.48	00:03:57
4. fb / fbdesktop	8,323 (5.07%)	86.10%	7,166 (6.33%)	32.02%	5.70	00:05:13
5. m.facebook.com / referral	5,831 (3.55%)	91.43%	5,331 (4.71%)	42.94%	5.40	00:02:48
6. facebook.com / social	4,444 (2.70%)	68.54%	3,046 (2.69%)	43.95%	6.10	00:04:05
7. xfxSURHmTk / (not set)	2,952 (1.80%)	14.87%	439 (0.39%)	47.90%	5.13	00:03:48
8. facebook.com / referral	2,144 (1.30%)	72.20%	1,548 (1.37%)	27.10%	7.30	00:06:15

- When you have a blog you can use this data to see which blog posts engage your audience the most.

### How to track pages per visit



- To view this Google Analytics user engagement metric to go Audience -> Overview. In the dashboard, you will see Pages/Session.



We suggest you take a look at the pages per session for each channel to see how they affect your engagement. To do that go to Acquisition -> All Traffic -> Channels

Default Channel Grouping	Acquisition			Behavior	
	Sessions	% New Sessions	New Users	Bounce Rate	Pages / Session
	164,308 % of Total: 100.00% (164,308)	68.94% Avg for View: 68.78% (0.24%)	113,279 % of Total: 100.24% (113,004)	40.45% Avg for View: 40.45% (0.00%)	5.86 Avg for View: 5.86 (0.00%)
1. Organic Search	53,877 (32.79%)	69.60%	37,498 (33.10%)	37.10%	6.10
2. Generic Paid Search	48,562 (29.56%)	68.08%	33,060 (29.18%)	45.54%	5.49
3. Direct	24,572 (14.95%)	72.88%	17,909 (15.81%)	44.21%	5.48
4. Social	13,429 (8.17%)	79.51%	10,677 (9.43%)	40.74%	5.94
5. (Other)	12,800 (7.79%)	70.21%	8,987 (7.93%)	37.12%	5.44
6. Branded Paid Search	7,153 (4.35%)	38.49%	2,753 (2.43%)	22.96%	8.88
7. Referral	2,203 (1.34%)	59.78%	1,317 (1.16%)	35.91%	5.80
8. Paid Search	1,593 (0.97%)	60.95%	971 (0.86%)	49.34%	4.61
9. Display	119 (0.07%)	89.92%	107 (0.09%)	48.74%	5.71

- For example: here you can see that the branded paid search traffic generated a much higher pages/session ratio (8.88) than paid search (4.61). To analyze this in more detail, take a look at the pages per session for all traffic sources. To do that go to Acquisition -> All Traffic -> Source/medium.

Source / Medium	Acquisition			Behavior	
	Sessions	% New Sessions	New Users	Bounce Rate	Pages / Session
	164,308 % of Total: 100.00% (164,308)	68.94% Avg for View: 68.77% (0.25%)	113,279 % of Total: 100.25% (112,993)	40.45% Avg for View: 40.45% (0.00%)	5.86 Avg for View: 5.86 (0.00%)
1. google / cpc	55,828 (33.98%)	64.34%	35,917 (31.71%)	42.63%	5.92
2. google / organic	52,049 (31.68%)	69.58%	36,216 (31.97%)	37.24%	6.07
3. (direct) / (none)	24,572 (14.95%)	72.88%	17,909 (15.81%)	44.21%	5.48
4. fb / fdesktop	8,323 (5.07%)	86.10%	7,166 (6.33%)	32.02%	5.70
5. m.facebook.com / referral	5,831 (3.55%)	91.43%	5,331 (4.71%)	42.94%	5.40
6. facebook.com / social	4,444 (2.70%)	68.54%	3,046 (2.69%)	43.95%	6.10
7. xfxSURHmTk / (not set)	2,952 (1.80%)	14.87%	439 (0.38%)	47.90%	5.13
8. facebook.com / referral	2,144 (1.30%)	72.20%	1,548 (1.37%)	27.10%	7.30



Over here you can see that the referral traffic from Facebook has the biggest ratio for pages/sessions. So if you seek more engagement you should invest in getting more referral traffic from Facebook.

### How to track the percentage of returning visitors

- To check that simply go to Audience –> Behavior -> New vs. Returning visitors.

Plot Rows Secondary dimension Sort Type: Default						
User Type ?	Acquisition			Behavior		
	Sessions ? ↓	% New Sessions ?	New Users ?	Bounce Rate ?	Pages / Session ?	Avg. Session Duration ?
	164,308 % of Total: 100.00% (164,308)	68.94% Avg for View: 68.77% (0.25%)	113,279 % of Total: 100.25% (112,993)	40.45% Avg for View: 40.45% (0.00%)	5.86 Avg for View: 5.86 (0.00%)	00:04:00 Avg for View: 00:04:00 (0.00%)
1. New Visitor	113,279 (68.94%)	100.00%	113,279 (100.00%)	39.54%	5.94	00:03:56
2. Returning Visitor	51,029 (31.06%)	0.00%	0 (0.00%)	42.48%	5.68	00:04:10

- In this case, the percentage of returning visitors is 31.06%.
- You can use this table to also compare other statistics between new and returning such as:
  - Bounce rate
  - Pages/session
  - Avg. session duration times
  - Conversion rate
  - Revenue
- That way you will see how much more money returning visitors are making you and how much you can afford to bring them back to your site.

### How to track the frequency of visits

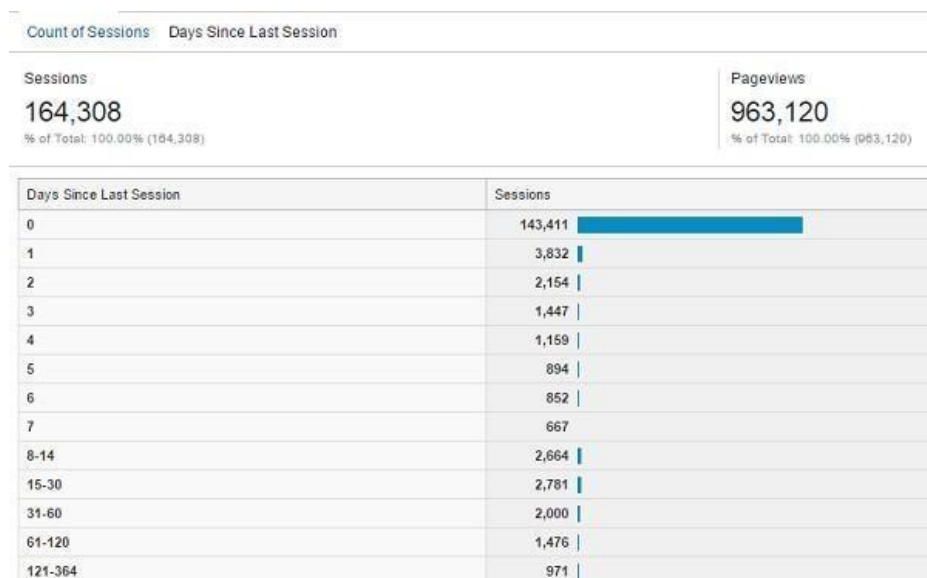
- Simply go to Audience -> Behavior -> Frequency & Recency. The first thing that you will see is the count of sessions. This represents the frequency of visits for the average user.

Count of Sessions Days Since Last Session	
Sessions: 164,308 % of Total: 100.00% (164,308)	Pageviews: 963,120 % of Total: 100.00% (963,120)
Count of Sessions	Sessions
1	113,279
2	24,178
3	9,286
4	4,774
5	2,859
6	1,892
7	1,333
8	1,019
9-14	2,999
15-25	1,580
26-50	687
51-100	177
101-200	57
201+	188

- In the table above you can see that most people visit the site only once (these are 113,279 sessions). Only a small percentage of the visitors make 2 sessions (24,178 sessions) or more.

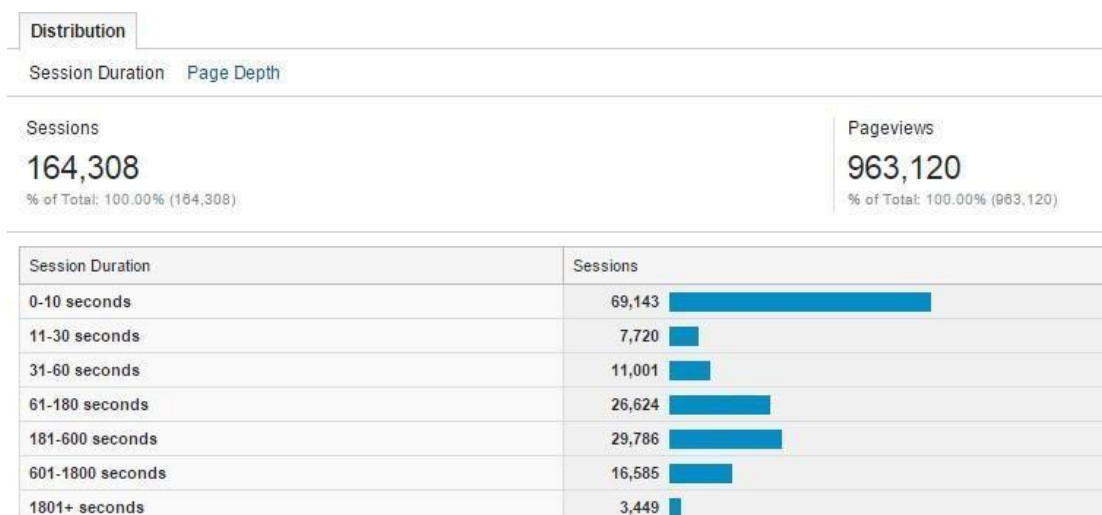
### Days since the last session

- By looking at this user engagement metric in Google Analytics you can understand how often people visit your site.
- How to track how many days have passed since the last session – Go to Audience -> Behavior -> Frequency & Recency and click on Days since the last session.
- Then you will see how many days have passed since most visitors' last session.



### How to track audience engagement rate

- Simply go to Audience -> Behavior -> Engagement
- By looking at Session duration you will see how long the majority of the visitors stayed on your site.



- In the table above, the majority spend between 0-10 seconds per session. Interestingly there are a lot of users who spend between 181-600 seconds on the site. If you click on Path Depth you will manage to see how many pages most sessions generate.

Page Depth	Sessions
<1	51
1	66,598
2	14,724
3	16,598
4	8,079
5	9,470
6	5,287
7	6,058
8	3,753
9	4,231
10	2,833
11	3,208
12	2,216
13	2,387
14	1,628
15	1,843
16	1,376
17	1,377
18	1,091
19	1,070
20+	10,430

**Conclusion:** In conclusion, tracking user engagement on a website is essential for understanding audience behavior and optimizing content. By monitoring metrics like bounce rate, page views, and session duration, site owners can improve their engagement strategies and ultimately convert more visitors into loyal customers.

### Quiz:

1. What are the criteria of engagement in the business site?
2. What are the steps to reduce bounce rate?

### Suggested Reference:

<https://searchbusinessanalytics.techtarget.com/definition/Web-analytics>

Web analytics by Avinash Kaushik Wiley publication

Web Analytics For Dummies by Jennifer LeClaire and Pedro Sostre

**References used by the students:** (Sufficient space to be provided)

**Rubric wise marks obtained:**

<b>Rubrics</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Total</b>
<b>Marks</b>						

## Experiment No: 2

### Measure the time taken to load home page and other pages

**Date:**

**Competency and Practical Skills:** Basic knowledge regarding Google analytics and Web analytics.

**Relevant CO:** CO2

**Objectives:**

- 1) To assess the website's performance and user experience.
- 2) To learn how to optimize the website's performance, improve the user experience, and ultimately increase website traffic and revenue.

**Equipment/Tools Required:** Personal Computer, Google Analytics, Internet.

**Theory:**

#### What is page load time?

Website load time — or web page load time — refers to how long it takes for a website, or web page, to fully load and appear on the screen. This includes all content on the page such as text, images, and videos. Simply, it's how fast all content on a web page loads.

Page speed can depend on a number of factors — some examples include Page type, user behavior, file sizes, website server/host, inefficient code, hotlinking, and too many plugins and/or widgets.

In its simplest terms, page load time is the average amount of time it takes for a page to show up on your screen. It's calculated from initiation (when you click on a page link or type in a Web address) to completion (when the page is fully loaded in the browser). Usually measured in seconds, page load time is made up of two different parts:

■ **Network and Server Time:** based on how speedy the internet connection is and how swiftly static assets like photos and other files are served up

■ **Browser Time:** how long it takes for the browser to parse and execute the document and render the page to make it available for user interaction

The same Web page can easily have different page load times in different browsers (e.g. Safari vs. Internet Explorer), on different platforms (e.g. mobile vs. desktop), and in different locations. If your site is served by one data center in the U.S. but you sell to customers in Australia and the U.K., for instance, those international shoppers are likely to experience much lengthier load times. But if your site's static assets are copied onto different data centers around the world, the page will pull from the data center that's closest to where your shoppers are. That can drastically speed up page load times.

Different pages on the same site can also have radically different load times, because of developer decisions like richer design elements, beefier functionality, and more content on a page. There are several online tools for determining average page load times, meaning it's possible for your Web development team to focus on streamlining your slowest-loading pages first.

## **Page Load Times and SEO**

There's reason to believe that page load times can have an impact on your SEO efforts. This is because of something known as Rank Brain. This is something used by Google to help determine how it should go about ranking sites.

If someone visits your website and the page takes a long time to load, they might end up clicking the back button. This is often called 'pogo-sticking.' Google will take this into account. Google's aim is to provide the people using its search engine, with a good user experience.

If someone visits your site, and shortly after, clicks the back button, it's a sign your site didn't provide them with a good experience. Following this, Google has a reason to downgrade your rankings.

Following this, it's important you factor page load times into your SEO strategy.

### **What is the average page load time?**

The average mobile web page takes 15.3 seconds to load. The problem is due to the majority of mobile sites having too many page elements. This problem persists despite most web traffic occurring on 4G instead of 3G.

### **What is a good page load time?**

Most companies agree that a good desktop page load time is under 2 seconds (about 28% say that a good load page time is under 1 sec and about 39% think the good load time is under 2 seconds)

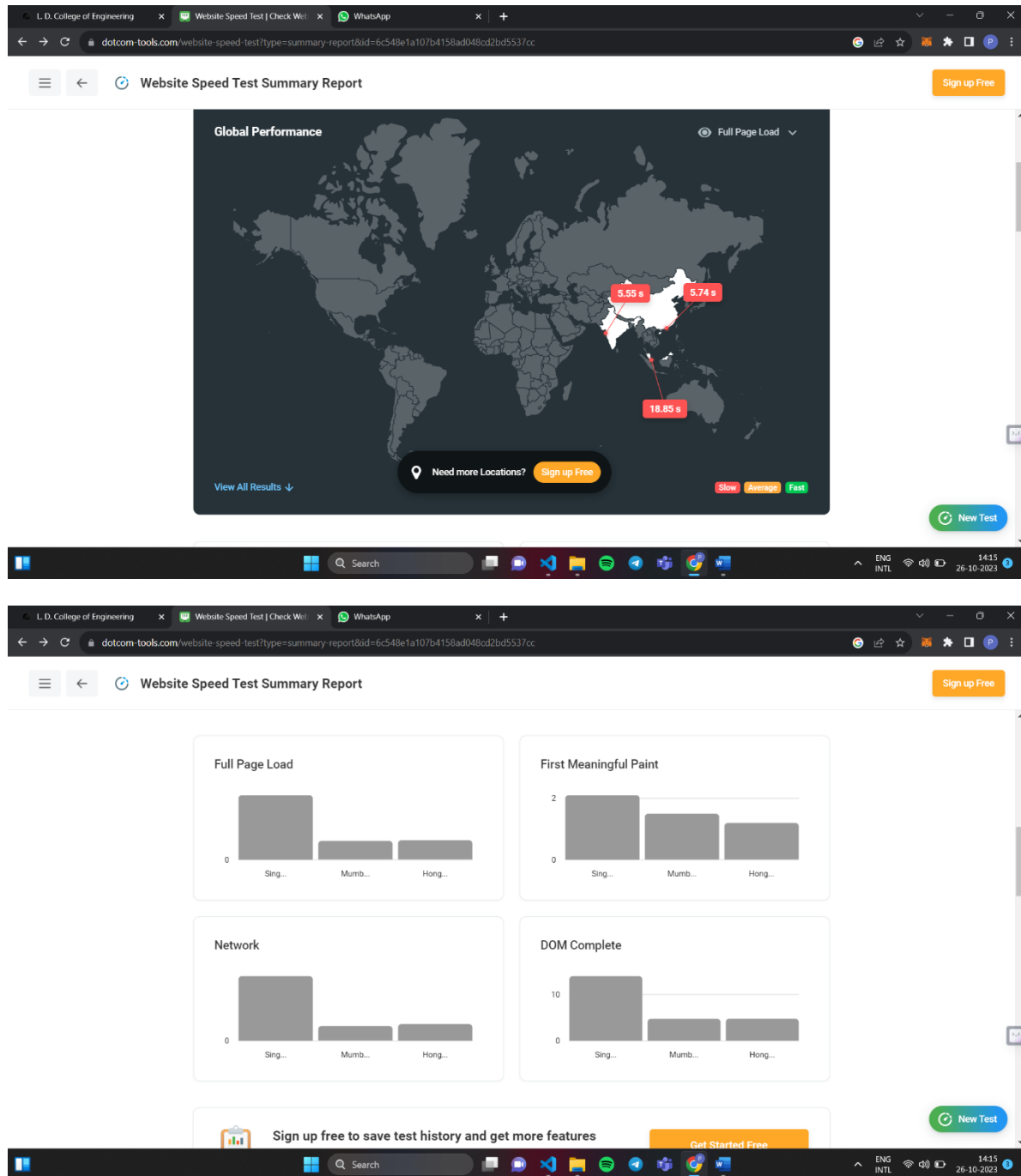
### **Safety and necessary Precautions:**

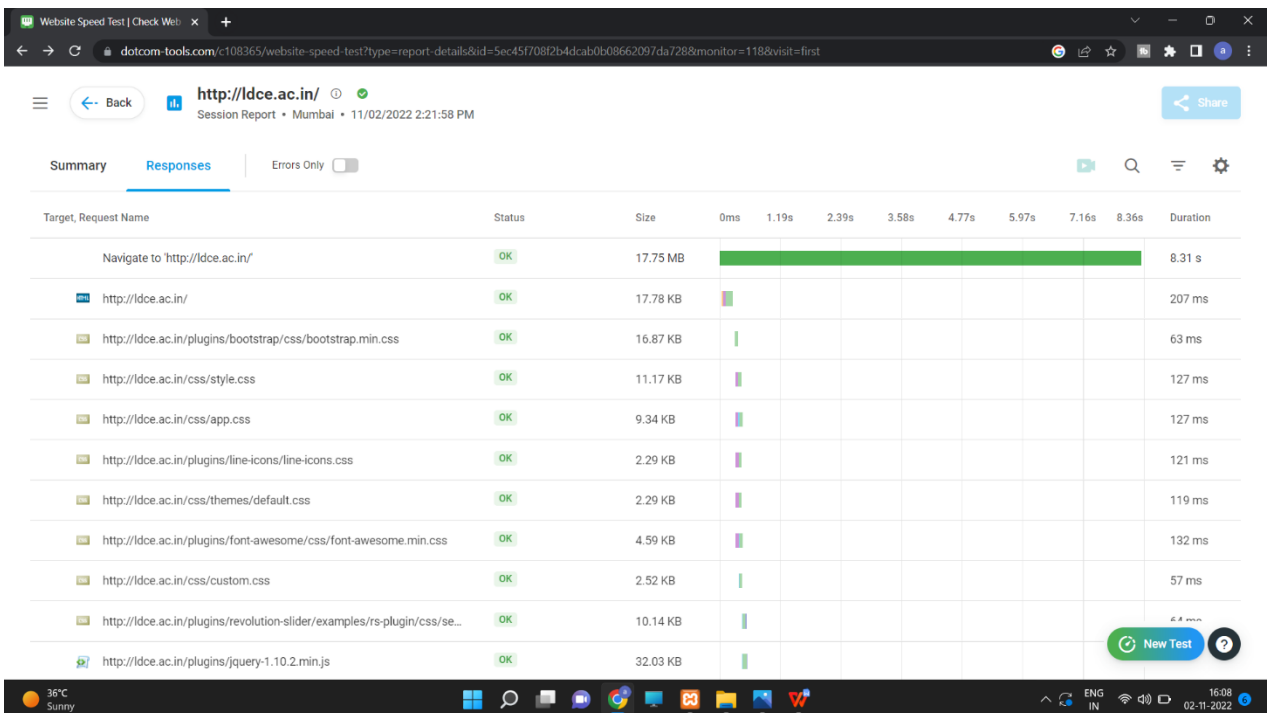
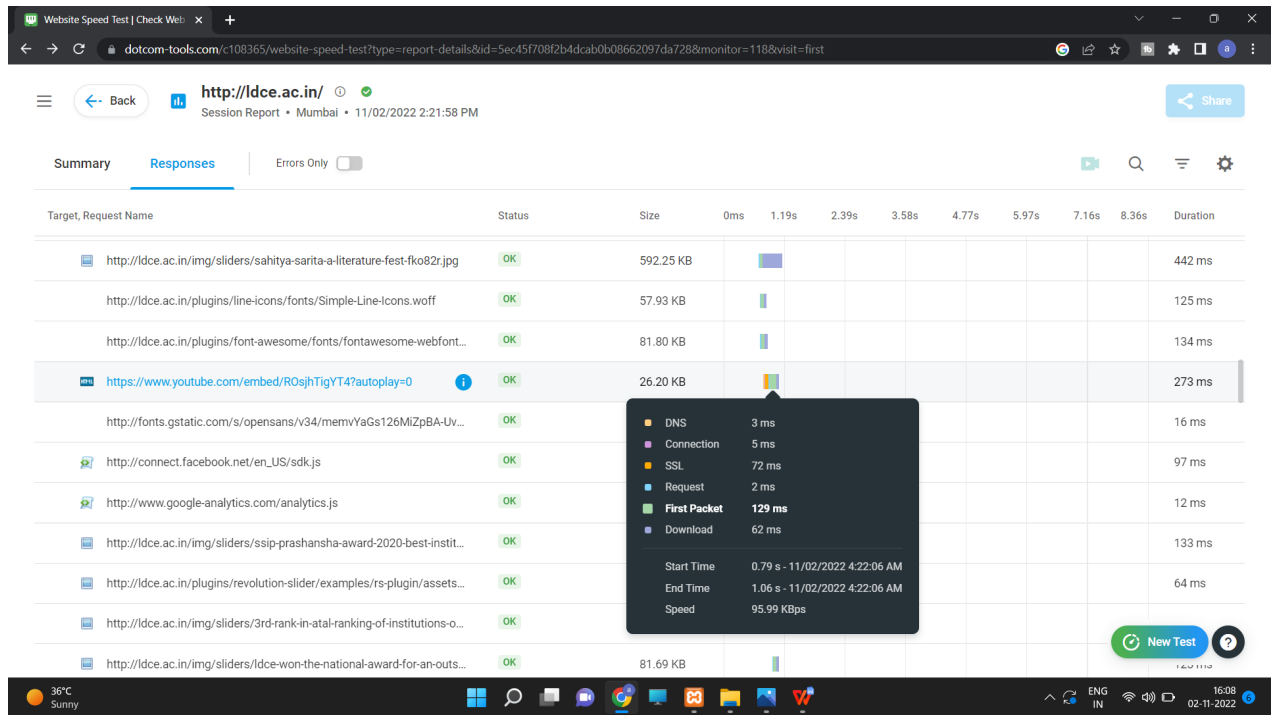
1. When measuring page load time, it is important to monitor traffic levels to ensure that your data is not skewed by unusually high or low traffic levels.
2. When measuring page load time, it is important to limit the sample size to ensure that your data is accurate and representative.

### **Procedure:**

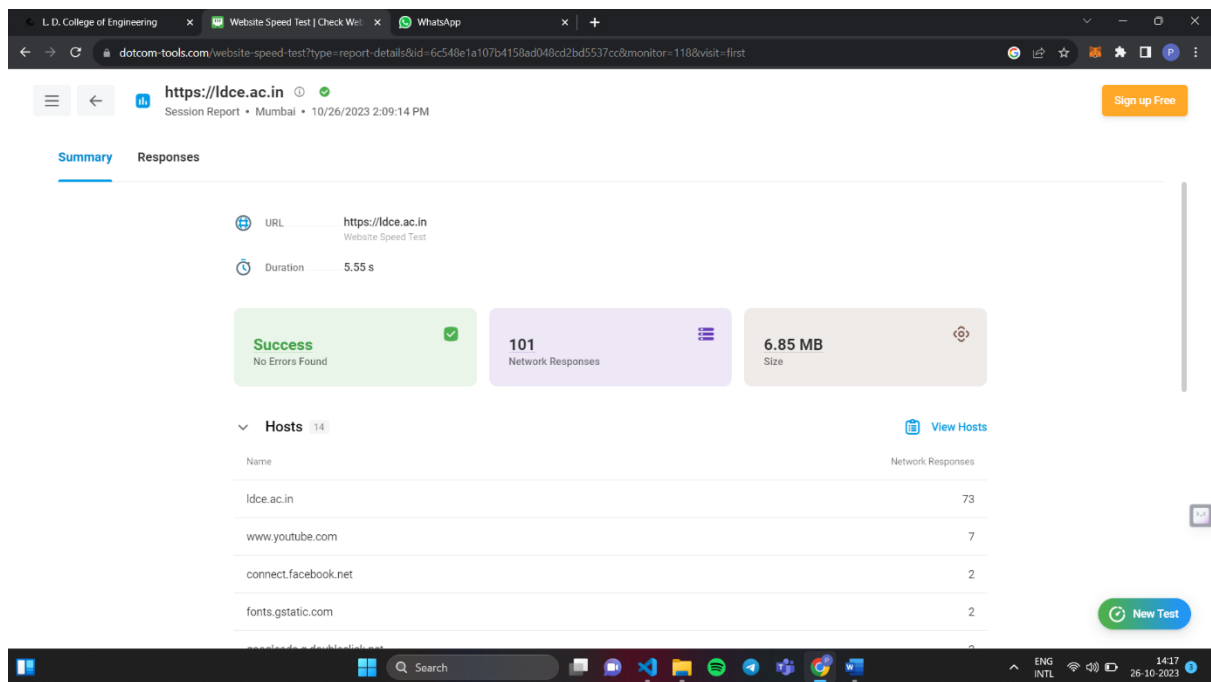
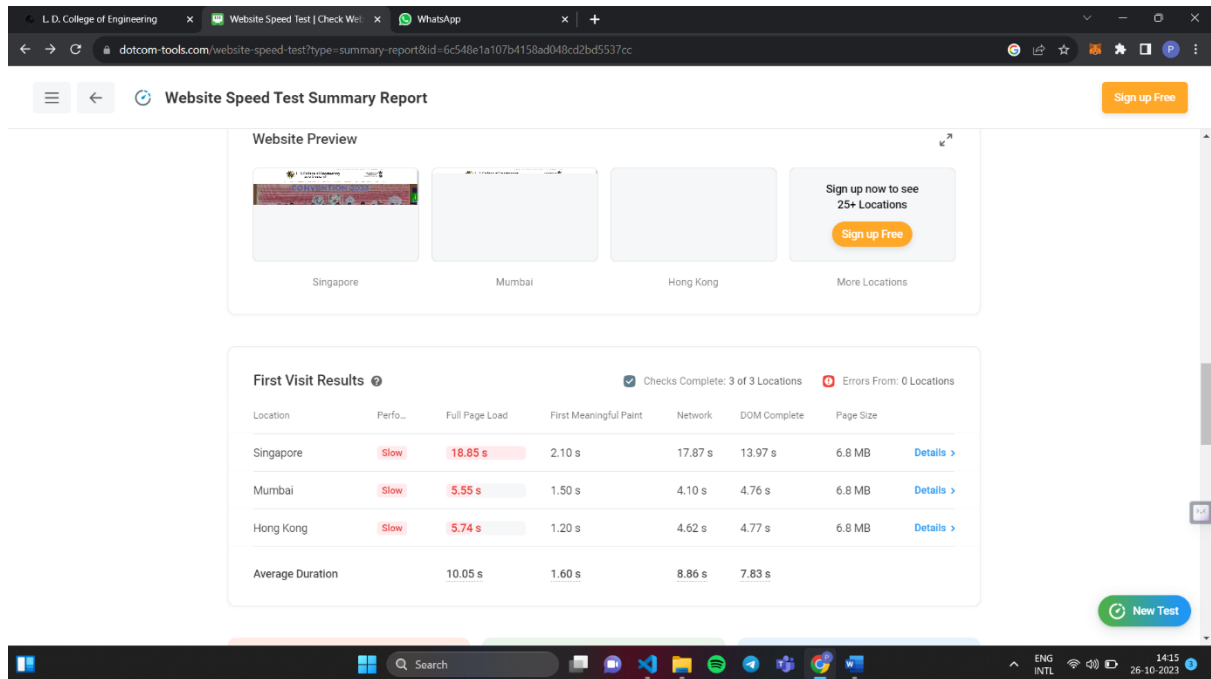
1. Set up Google Analytics: Create a Google Analytics account and add the tracking code to your website's HTML code.
2. Enable Site Speed Tracking: In your Google Analytics account, go to Admin > Property Settings > Tracking Info > Data Collection, and turn on "Site Speed Sample Rate."
3. Create a new view: Create a new view in your Google Analytics account specifically for site speed data.
4. Set up Site Speed reports: In your Google Analytics account, go to Admin > View Settings > Site Speed, and turn on "Site Speed Tracking."
5. Enable Page Timing: In your Google Analytics account, go to Admin > View Settings > Site Speed > Advanced Settings, and turn on "Page Timing."
6. Wait for data to populate: It may take some time for Google Analytics to start tracking site speed data. Wait for a few days for the data to populate.
7. View Site Speed reports: In your Google Analytics account, go to Behavior > Site Speed to view the site speed reports. Here, you can see the average page load time, page timings, and other performance metrics for your website's pages.

## Observations:









**Conclusion:** Understanding and optimizing page load time is crucial for enhancing website performance and user experience, which can impact SEO rankings. The average mobile page load time is a concerning 15.3 seconds, while a good desktop load time is typically under 2 seconds. Monitoring traffic levels and using representative data are essential precautions in this practical.

### Quiz:

1. What are the tools to check the page load time in a different browser?
2. Give the steps to reduce page load time.

### Suggested Reference:

<https://searchbusinessanalytics.techtarget.com/definition/Web-analytics>  
Web analytics by Avinash Kaushik Wiley publication

**References used by the students:**

**Rubric wise marks obtained:**

<b>Rubrics</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Total</b>
<b>Marks</b>						

## Experiment No: 3

### Perform A/B Testing

**Date:**

**Competency and Practical Skills:** Basic knowledge regarding Web analytics, Google optimize and statistical analysis.

**Relevant CO:** CO4

**Objectives:** (a) To familiarize learners with the google Optimize tool.  
(b) Learn how to optimize websites for improved performance and user experience.

**Equipment/Tools Required:** Personal Computer, Google optimize, Internet.

**Theory:**

**What is A/B testing?**

A/B testing (also known as split testing) is the process of comparing two versions of a web page, email, or other marketing asset and measuring the difference in performance. You do this giving one version to one group and the other version to another group. Then you can see how each variation performs. Think of it like a competition. You're pitting two versions of your asset against one another to see which comes out on top. Knowing which marketing asset works better can help inform future decisions when it comes to web pages, email copy, or anything else.

The main objective of performing A/B testing is to determine which version of a webpage, advertisement, or other marketing asset performs better in terms of achieving a specific goal or objective. A/B testing allows you to test two variations of a webpage or asset and see which version performs better in terms of user engagement, click-through rates, conversion rates, and other key metrics.

By conducting A/B testing, you can identify which changes to your website or marketing assets result in the highest engagement and conversion rates, which can ultimately lead to improved business outcomes, such as increased revenue, higher customer satisfaction, and better user experience.

**How Does A/B Testing Work?**

To understand how A/B testing works, let's take a look at an example. Imagine you have two different designs for a landing page—and you want to know which one will perform better. After you create your designs, you give one landing to one group and you send the other version to the second group. Then you see how each landing page performs in metrics such as traffic, clicks, or conversions. If one performs better than the other, great! You can start digging into why that is, and it might inform the way you create landing pages in the future.

**Why Do You Really Need To Do A/B Testing?**

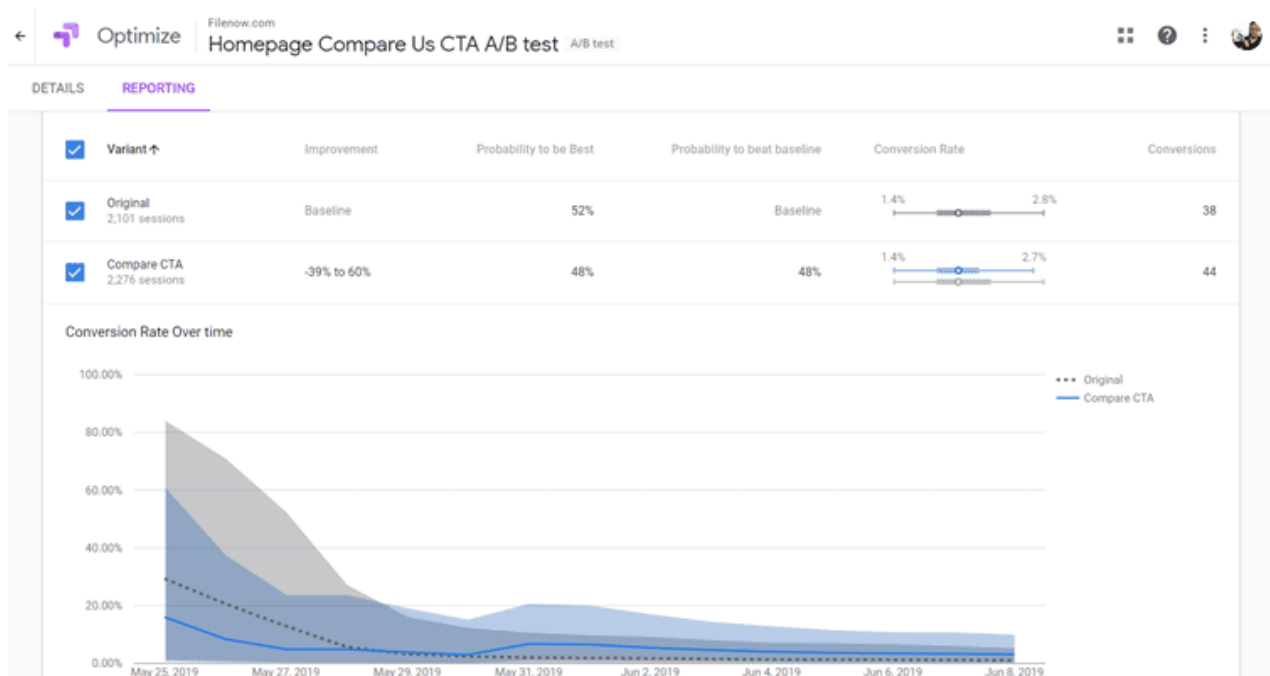
Creating a website or email marketing campaign is just the first step in marketing. Once you have a website, you'll want to know if it helps or hinders sales. A/B testing lets you know what words, phrases, images, videos, testimonials, and other elements work best. Even the simplest changes can impact conversion rates.

**Safety and necessary Precautions:**

3. Before launching an A/B test, it is important to set up a test environment that is isolated from your live website.
4. When starting a new A/B test, it is important to test with a small sample size to limit the potential impact on your website and ensure that your test is functioning correctly.

**Procedure:**

1. Create a Google Optimize account: Go to <https://optimize.google.com/> and sign up for a new account.
2. Create a new experiment: In the Google Optimize dashboard, click on the "Create Experiment" button.
3. Choose the A/B testing option: Select "A/B Test" as the experiment type.
4. Set up experiment details: Fill in the experiment name, website URL, and objective.
5. Define experiment variants: Create the variant(s) for your experiment. These could be changes to the website's design, layout, copy, or functionality.
6. Target your experiment: Define the audience for your experiment by selecting specific URL or audience segments.
7. Configure your experiment: Set the parameters for the experiment, such as the traffic allocation, experiment duration, and experiment options.
8. Preview and launch experiment: Preview the experiment to ensure everything is set up correctly. Once ready, launch the experiment.
9. Monitor experiment results: Keep an eye on the experiment results in real-time through the Google Optimize dashboard.
10. Analyze experiment data: Once the experiment has run for the desired period, analyze the results to determine the winner(s) and take the appropriate action(s).

**Observations:**

< Rich Page  
Homepage CTA Test

Account #10007970

Summary Report Live Logs Change History

**Experiment**

Type  
A/B - ID 100032763

Integrations  
[Add/Edit Integrations](#)

Status **Active**

**Objective**

The objective of this A/B Experience is to focus primarily on **Decrease BounceRate**. The other objective(s) include **Increase Engagement**.

**Goals**

Primary  
● Decrease BounceRate

Secondary (1)  
● Increase Engagement

**Target Overview**

Site Area

Include  
● Page URL Matches Exactly htt...

100%

Audiences  
All Visitors

Stats Settings  
● Confidence 97%

Variations (2)

50% Original Page

50% Variation 1

**Conclusion:** Use Google Optimize to create and manage A/B tests to identify the best versions of your web pages.

### Quiz:

1. What are the tools available in the market for A/B testing other than google optimize?
2. Which statistical approach to use to run an A/B test?

### Suggested Reference:

<https://searchbusinessanalytics.techtarget.com/definition/Web-analytics>

Web analytics by Avinash Kaushik Wiley publication

Web Analytics For Dummies by Jennifer LeClaire and Pedro Sostre

### References used by the students:

### Rubric wise marks obtained:

Rubrics	1	2	3	4	5	Total
Marks						

## Experiment No: 4

### Use Cookies to Store Username

**Date:**

**Competency and Practical Skills:** basic understanding of web development languages such as HTML, CSS, and JavaScript.

**Relevant CO:** CO2

**Objectives:** (a) to teach learners how to set and retrieve cookies using a server-side programming language like PHP or Python, as well as how to use client-side JavaScript code to interact with the cookie stored in the user's browser.

**Equipment/Tools Required:** Personal Computer, Internet, Server-side Programming Language.

**Theory:**

#### What are Cookies?

Cookies are text files with small pieces of data — like a username and password — that are used to identify your computer as you use a computer network. Specific cookies known as HTTP cookies are used to identify specific users and improve your web browsing experience.

Data stored in a cookie is created by the server upon your connection. This data is labeled with an ID unique to you and your computer.

When the cookie is exchanged between your computer and the network server, the server reads the ID and knows what information to specifically serve to you.

#### What Are Cookies Used For?

Websites use HTTP cookies to streamline your web experiences. Without cookies, you'd have to login again after you leave a site or rebuild your shopping cart if you accidentally close the page. Making cookies an important part of the internet experience.

Based on this, you'll want to understand why they're worth keeping — and when they're not.

Here's how cookies are intended to be used:

#### Session management

For example, cookies let websites recognize users and recall their individual login information and preferences, such as sports news versus politics.

#### Personalization

Customized advertising is the main way cookies are used to personalize your sessions. You may view certain items or parts of a site, and cookies use this data to help build targeted ads that you might enjoy.

#### Tracking

Shopping sites use cookies to track items users previously viewed, allowing the sites to suggest other goods they might like and keep items in shopping carts while they continue shopping.

While this is mostly for your benefit, web developers get a lot out of this set-up as well.

Cookies are stored on your device locally to free up storage space on a website's servers. In turn, websites can personalize while saving money on server maintenance and storage costs.

#### What are the different types of HTTP Cookies?

With a few variations, cookies in the cyber world come in two types: session and persistent.

**Session cookies** are used only while navigating a website. They are stored in random access



```
background-color: #fff;
max-width: 400px;
margin: 0 auto;
padding: 20px;
border: 1px solid #ccc;
border-radius: 5px;
box-shadow: 0 2px 5px rgba(0, 0, 0, 0.1);
}

label {
display: block;
margin-bottom: 10px;
}

input[type="text"],
input[type="password"] {
width: 100%;
padding: 10px;
border: 1px solid #ccc;
border-radius: 5px;
margin-bottom: 10px;
}

button {
background-color: #007BFF;
color: #fff;
border: none;
padding: 10px 20px;
border-radius: 5px;
cursor: pointer;
}

button:hover {
background-color: #0056b3;
}

#userInfo {
text-align: center;
}
</style>
</head>
<body>
<h1>Login Form</h1>
<form id="loginForm">
<label for="username">Username:</label>
<input type="text" id="username" required>
<label for="password">Password:</label>
<input type="password" id="password" required>
<button type="button" onclick="login()">Log In</button>
<button type="button" onclick="logout()" style="display: none;">Log Out</button>
</form>
<div id="userInfo" style="display: none;">
<p>Welcome, <span id="usernameDisplay"></span>!</p>
<button type="button" onclick="logout()">Log Out</button>
</div>

<script>
// Function to set a cookie
function setCookie(name, value, days) {
const expires = new Date();
expires.setTime(expires.getTime() + (days * 24 * 60 * 60 * 1000));
document.cookie = name + "=" + value + "; expires=" + expires.toUTCString() + "; path="/;
}
```



```
// Function to get a cookie by name
function getCookie(name) {
    const cookies = document.cookie.split('; ');
    for (const cookie of cookies) {
        const [cookieName, cookieValue] = cookie.split('=');
        if (cookieName === name) {
            return decodeURIComponent(cookieValue);
        }
    }
    return null;
}

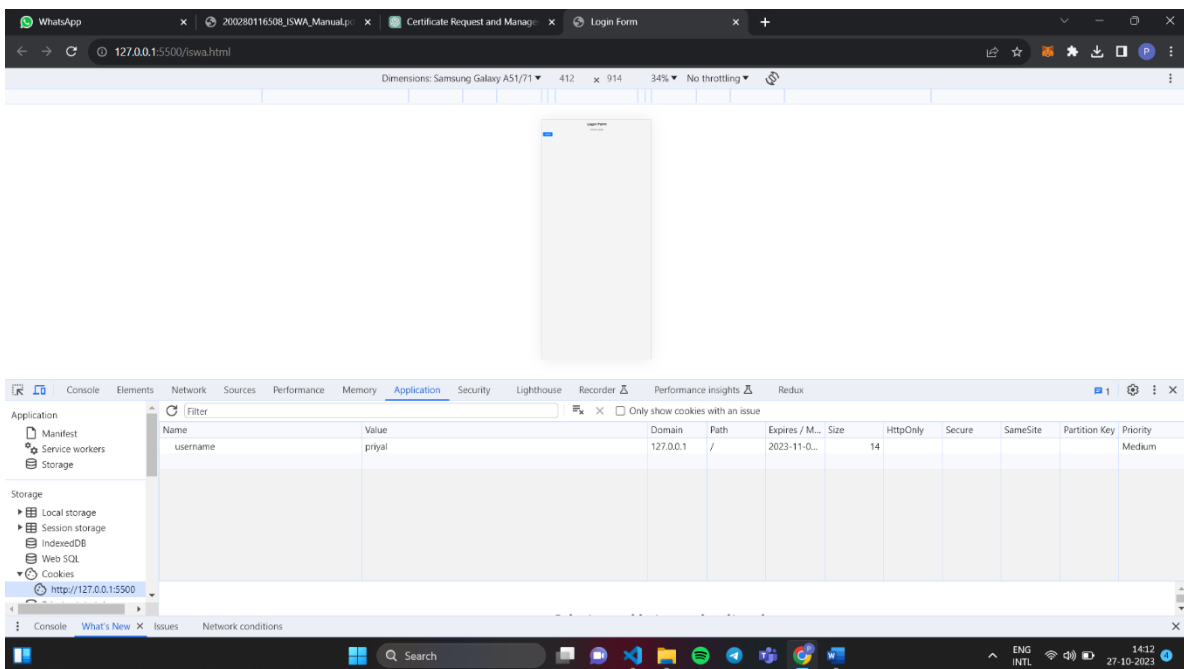
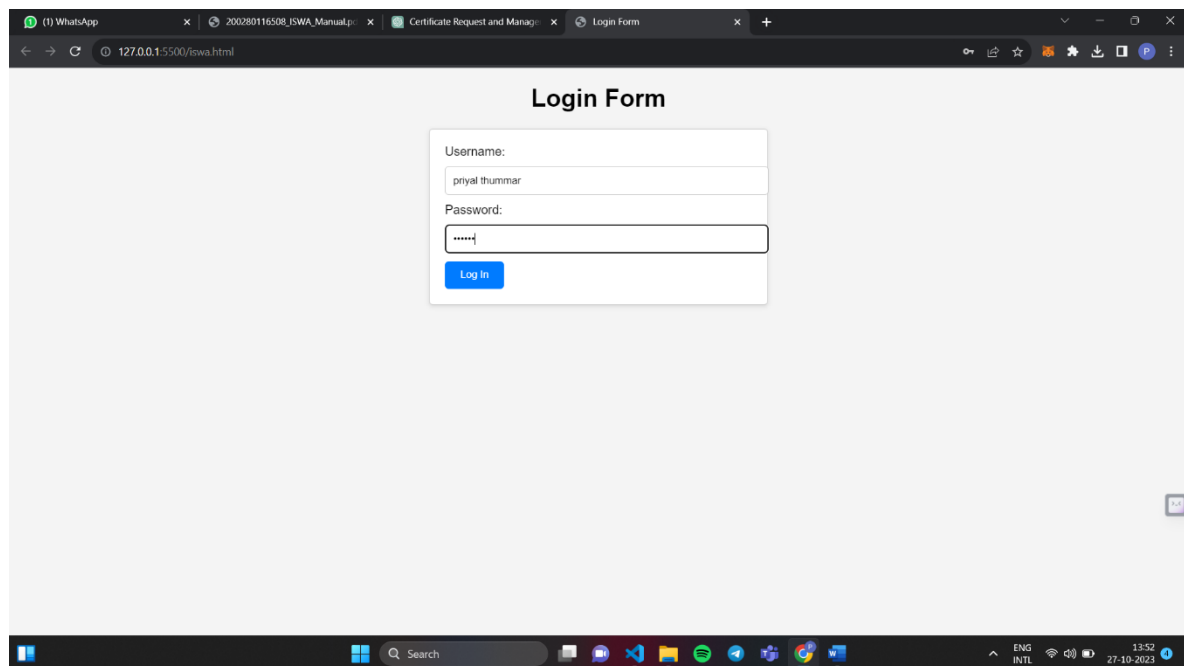
// Function to log in
function login() {
    const username = document.getElementById("username").value;
    const password = document.getElementById("password").value;
    if (username && password) {
        // In a real system, you would validate the username and password against a database.
        // For simplicity, we'll use hardcoded values here.
        if (username) {
            setCookie("username", username, 7); // Cookie expires in 7 days
            updateUI();
        } else {
            alert("Invalid username or password");
        }
    } else {
        alert("Please enter both username and password");
    }
}

// Function to log out
function logout() {
    setCookie("username", "", -1); // Delete the "username" cookie
    updateUI();
}

// Function to update the UI based on the cookie
function updateUI() {
    const usernameCookie = getCookie("username");
    if (usernameCookie) {
        document.getElementById("loginForm").style.display = "none";
        document.getElementById("userInfo").style.display = "block";
        document.getElementById("usernameDisplay").textContent = usernameCookie;
        document.querySelector("#loginForm button[type='button']").style.display = "none";
        document.querySelector("#userInfo button[type='button']").style.display = "block";
    } else {
        document.getElementById("loginForm").style.display = "block";
        document.getElementById("userInfo").style.display = "none";
        document.getElementById("usernameDisplay").textContent = "";
        document.querySelector("#loginForm button[type='button']").style.display = "block";
        document.querySelector("#userInfo button[type='button']").style.display = "none";
    }
}

// Check and update UI on page load
window.onload = updateUI;
</script>
</body>
</html>
```

**Output:**



**Conclusion:** In conclusion, this practical provides an overview of HTTP cookies, their significance in enhancing user experiences on websites, and the various types of cookies, including session and persistent cookies. Cookies play a crucial role in session management, personalization, and tracking, benefiting both users and web developers by optimizing website functionality and reducing server costs

### Quiz:

1. Write the program that show concept of Zombie cookies
2. How the third part cookies work?

**Suggested Reference:**

**Yug Khokhar**

**200280116059**

<https://searchbusinessanalytics.techtarget.com/definition/Web-analytics>

Web analytics by Avinash Kaushik Wiley publication

Web Analytics For Dummies by Jennifer LeClaire and Pedro Sostre

**References used by the students:**

**Rubric wise marks obtained:**

<b>Rubrics</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Total</b>
<b>Marks</b>						

## Experiment No: 5

### Write Content So That Users Come Back To the Site

**Date:**

**Competency and Practical Skills:** Basic knowledge regarding Web analytics, understanding of search engine optimization (SEO), and how to optimize your content for search engines.

**Relevant CO: CO2**

**Objectives:**

- (a) To familiarize learners with how to conduct research on their target audience to understand their interests, preferences, and pain points.
- (b) Learn how to write engaging and valuable content that meets the needs of the audience.

**Equipment/Tools Required:** Personal Computer, Analytics tools, Internet and Writing software.

**Theory:****1. Personalize Your Website**

Providing visitors with a unique, personalized experience makes it easier to turn them into brand advocates. Here's how you can customize their experience:

**Offer customized landing pages.**

There are several ways you can use customized landing pages to increase engagement. An easy way to implement this is by featuring products based on what customers have bought or engaged with previously. AddThis features Targeting Audiences overlay, helping you feature these products. Wayfair does a great job of engaging customers by showing them products they've already viewed, and then products in a similar wheelhouse picked for them.

**Curate a featured section.**

Showcase products or content in a special "Best of" section. It can be a large banner on your homepage or a sidebar list. The AddThis Link Promotion Banner makes it easy to highlight products or content you want to draw your audience to. Whether you're basing the showcased products on seasonal events, user behavior, or items that need more visibility, make it relevant to the consumer. Consider creating different versions of your showcased products for different landing pages, and use them to measure performance.

**Provide new and returning visitors with relevant information.**

With AddThis Audience Targeting Rules, you can create rules to show appropriate messaging to new and returning users. For example, you can create "Get started" messaging for new visitors, and "Explore more" messaging for returning visitors. Read more on [How to Engage Both New and Returning Visitors to Your Website](#).

**Suggest content users may like.**

The best way to keep visitors on your website is to offer them content that interests them. The AddThis Related Posts Tools allow you to do just that. For example, if your site focuses on selling clothing, you can engage your visitors with content about style trends; or if your site focuses on cookware, you can engage your visitors with content around organic food and recipes. The Rogers Family Coffee Company used this tool to increase engagement and saw significant results.

## **2. Showcase What's New and Popular**

An easy way to turn visitors into brand advocates is to give them a reason to come back to your site . . . and to keep coming back. Offering new content on a regular basis and highlighting your greatest hits will foster repeat engagement.

### **Highlight your new content.**

Whether you have a dedicated section, a large homepage banner, or just list content and products in chronological order, make sure visitors know that what they're seeing is new. And also, keep it fresh. This will give visitors a reason to keep coming back. We Work Remotely denotes new job listings with a "new" button, so frequent visitors can scan content quickly. Sur La Table adds words like "new" and "just added" to their homepage images to highlight new products and accessories.

### **Keep popular content front and center.**

Your popular content is popular for a reason, so keep it in heavy rotation as long as it's relevant! Keep an eye on articles that are consistently showing a decent level of traffic in Google Analytics, and resurface those posts to new users. Having a section dedicated to what's popular, or bestsellers, will also make users feel like you have a large audience; and if they enjoy the content, they'll feel like they're a part of your community.

Lululemon's "bestsellers" section is the first-offered list on their homepage. This gives new visitors a simple insight into what the brand's fanbase loves.

### **Emphasize highly shared content.**

The more shares a piece of content has, the more users will want to share it as well. If hundreds of people already like it, surely their Facebook friends will too! AddThis Sharing Buttons offer an easy-to-implement ability to display the number of social shares content has received. See how Mercy Home grew traffic by 10 percent with AddThis Share Tools.

## **3. Create a Good User Experience (UX)**

Your website design and usability are two of the most important factors that influence how much time visitors spend on your site, and whether they'll return. A clean, attractive design and easy navigation will go a long way in turning first-time visitors into brand advocates.

### **Make sure your site is clear and well-designed.**

When it comes to design, keep it simple. Forget bells and whistles, and focus on the essentials. Use eye-catching colors, readable fonts, and rich images and video. Don't be afraid of whitespace! Harry's is a beautiful, minimalist site, but an effective one. Here's more in-depth guidelines from Hubspot to help you get started that include simplicity and hierarchy, and bring us to another point: usability.

### **Make sure your site is usable — on a computer AND a phone.**

It's not enough to have a site that looks good—it needs to be easy to navigate. Intuitive menus, clear calls to action, and robust search capabilities all make for a good user experience. And don't forget the #1 rule—make sure your website is mobile-friendly. Zipcar is an easy-to- navigate site with all the important information you'll need to decide whether or not to join right on the front page.

## **4. Engage Users through Email**

Email is a great tool for engaging one-on-one with your audience, keeping them engaged with your content, or re-engaging them after they've abandoned your site. Personalize your emails with content that targets exactly what the consumer needs. When you provide users with specific content beyond what they can find on the website, they'll feel "in the know" and will be more likely to become brand advocates.

### **Collect emails through your website.**

A 2014 study showed that email marketing is nearly 40 times more effective at acquiring customers than Facebook and Twitter combined; 91 percent of US consumers use email daily. Calls to action to sign up for your newsletter should be prominent on your website. The AddThis Overlay Tool can be

used to collect email addresses. A customizable conversion lightbox pops up, prompting visitors to sign up, getting your messaging in front of everyone who visits your site. See how Minneapolis Running used audience targeting to grow their email subscribers.

### Safety and necessary Precautions:

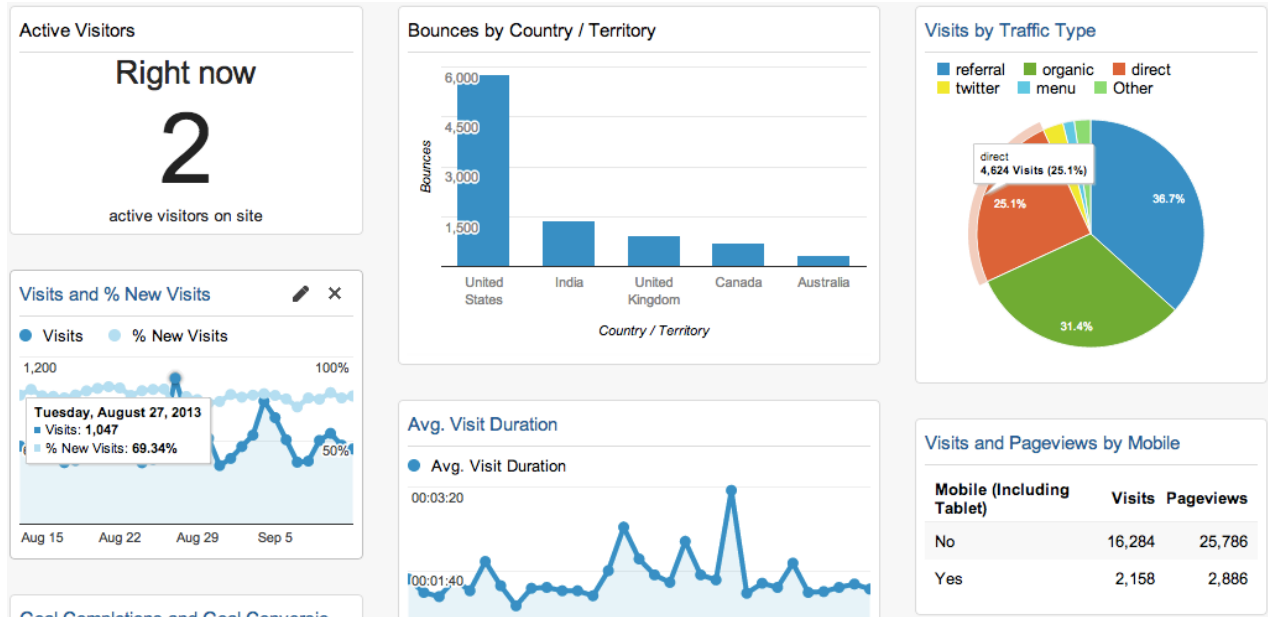
1. Always make sure that the content you are writing is original and not copied from other sources.
2. When writing about sensitive topics such as politics, religion, or controversial issues, be mindful of the potential impact your words may have on others.

### Procedure:

- 1) Identify your target audience: Before writing content, it is important to understand who your target audience is. This will help you tailor your content to their interests and needs.
- 2) Choose a topic: Choose a topic that is relevant and interesting to your target audience. Conduct keyword research to identify popular search terms related to your topic.
- 3) Plan your content: Create an outline or a rough draft of your content, including the main points you want to cover and the structure of your article or blog post.
- 4) Conduct research: Conduct research on your topic to gather information and statistics to support your content. Use reputable sources to ensure the accuracy and credibility of your information.
- 5) Write your content: Write your content in a clear and concise manner. Use subheadings, bullet points, and other formatting techniques to make your content easy to read and scan.
- 6) Use visuals: Use images, videos, or infographics to enhance your content and make it more engaging.
- 7) Edit and proofread: Edit and proofread your content for grammar and spelling errors. Make sure your content is easy to understand and free of typos.
- 8) Optimize for search engines: Use relevant keywords and phrases in your content to improve its visibility in search engines. Use header tags, meta descriptions, and alt tags for images to improve your SEO.
- 9) Publish and promote: Publish your content on your website and promote it on social media and other relevant channels. Monitor its performance and make changes as needed.

### Observations:





**Conclusion:** In conclusion, by personalizing your website, showcasing new and popular content, prioritizing a good user experience, and engaging users through email, you can create a compelling online presence that keeps users coming back for more. Remember to always prioritize originality and sensitivity in your content to maintain a positive brand image and user engagement.

### Quiz:

1. Web copy and web content – what's the difference?
2. Why quality content is important?

### Suggested Reference:

<https://searchbusinessanalytics.techtarget.com/definition/Web-analytics>

"Content Strategy for the Web" by Kristina Halvorson

Web Analytics For Dummies by Jennifer LeClaire and Pedro Sostre

### References used by the students:

### Rubric wise marks obtained:

Rubrics	1	2	3	4	5	Total
Marks						

## Experiment No: 6

**Build your keyword list (a list or spreadsheet of attainable, relevant keywords), write content around those keywords and track performance and rankings Find the blogs which takes people to this site.**

**Date:**

**Competency and Practical Skills:** Basic knowledge regarding Web analytics, understanding of search engine optimization (SEO), and how to optimize your content for search engines.

**Relevant CO:** CO2

**Objectives:** (a) To familiarize learners with how to conduct research on their target audience to understand their interests, preferences, and pain points.  
(b) Learn how to write engaging and valuable content that meets the needs of the audience .

**Equipment/Tools Required:** Personal Computer, keyword research tools, Internet and Google Analytics

**Theory:**

**What is a keyword list?**

Your SEO keyword list is just a list of the key terms that you're focusing on for any given project. There isn't a specific format that keyword lists need to follow. You can easily create one with a spreadsheet.

It's important to keep a permanent list for several reasons. Creating a keyword research list gives you:

- A lasting record of what you've targeted
- A starting point for further development
- A resource that you can pass off to other team members

It should include all of the terms that you're using, including a variety that is fit for different customers or different stages of the buying process. In most cases, that's going to mean a healthy selection of:

- question keywords
- buyer intent keywords
- long-tail keywords

**SEO keywords vs. PPC keywords**

It's important to understand the difference between SEO keywords and PPC keywords.

**The main difference is intent.**

SEO keyword lists are broad and fit to be used for long-term strategies. They may change a lot over time because there is a lot of room for testing and error.



PPC keyword lists, on the other hand, focus on a tight set of keywords that target buyers at the end of the buying process. They are designed to be cost-effective for the budget of the project. That may mean that high-competition keywords won't even make the cut.

### **Basic tips for building a keyword list**

Selecting the right keyword list for your campaign can help you show your ads to the right customers. Your keywords should match the terms your potential customers would use to find your products or services

#### **Think like a customer when you create your list**

Write down the main categories of your business, and then write down the terms or phrases that might fall under each of those categories. Include terms or phrases your customers would use to describe your products or services.

#### **Select specific keywords to target specific customers**

Select more specific keywords that directly relate to your ad's theme if you want to target customers who may be interested in a particular product. Using more specific keywords would mean that your ad only appears for terms that apply to your business. But keep in mind that if the keywords are too specific, you might not be able to reach as many people as you'd like.

#### **Select general keywords to reach more people**

Select more general keywords if you'd prefer to reach as many people as possible. Keep in mind that you might find it difficult to reach potential customers when adding very general keywords because your ad could appear for searches that aren't always related to your business. Also, more general keywords can be more competitive and may require higher bid amounts. Layer broad targeting with Smart Bidding, so machine learning technology can prioritize the best performing searches regardless of their match type.

Test general keywords, and then decide which ones give you better results. No matter how general your keywords are, they should always be relevant to your ads and website.

#### **Group similar keywords into ad groups**

To show more relevant ads to potential customers, group your keywords and ads into ad groups based on your products, services, or other categories. If multiple keywords match a given search term, Google chooses the keyword to serve based on the ranking outlined about similar keywords in the same ad group. Having the same keyword in different match types shouldn't increase your costs or hurt performance in any way.

#### **Safety and necessary Precautions:**

1. When using online tools for keyword research, content creation, or analytics, make sure you protect your data and personal information.
2. While it may be tempting to use shortcuts or unethical tactics to boost your rankings, it's important to avoid these practices.

#### **Procedure:**

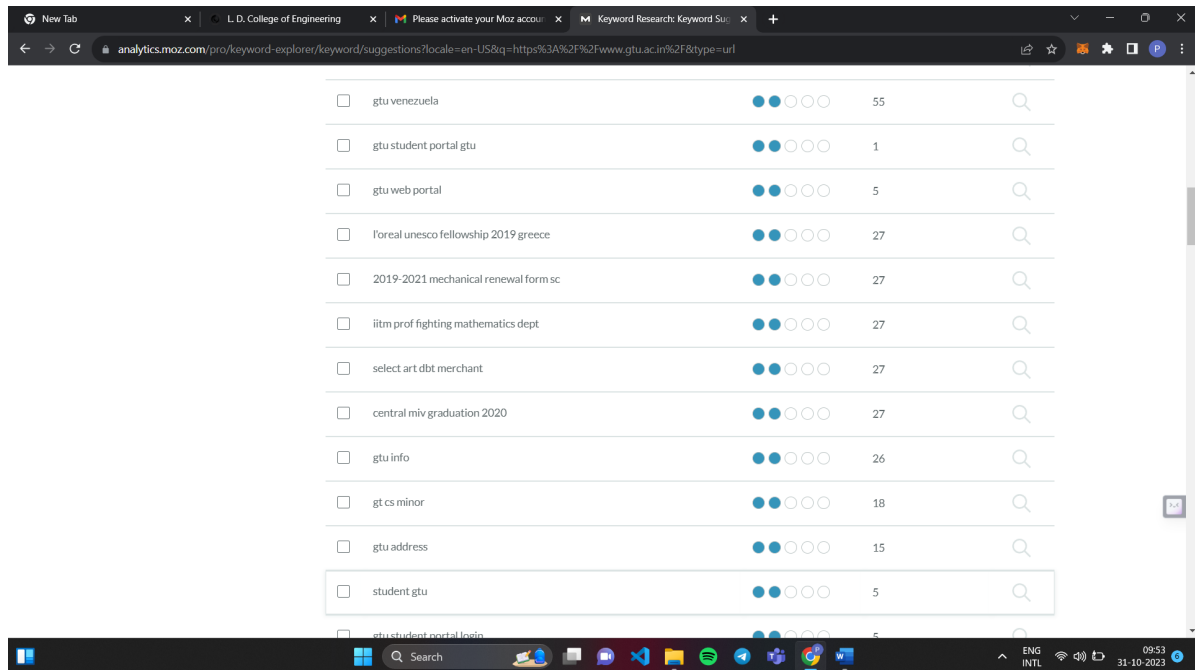
- 1) Start by researching your industry and target audience to identify relevant keywords. Use keyword research tools such as Google Keyword Planner, SEMrush, or Ahrefs to find keywords that are attainable and relevant to your business.
- 2) Create a spreadsheet to organize your list of keywords, including the search volume, competition level, and relevance to your business.
- 3) Develop a content strategy around your keyword list. This could include creating blog posts, videos, infographics, or other types of content that align with your keywords and provide value to your audience.

- 4) Optimize your content for search engines by including your keywords in the title, meta description, headers, and throughout the body of the content.
- 5) Monitor the performance and rankings of your content using a tool like Google Analytics or a rank tracking tool like SEMrush or Ahrefs.
- 6) Use the data from your tracking tools to make adjustments to your content and optimize your keyword strategy as needed.
- 7) Identify blogs and websites that could drive traffic to your site based on their relevance to your industry and target audience.
- 8) Reach out to these blogs and websites to pitch guest posts or collaborations that could lead to backlinks and increased traffic to your site.
- 9) Monitor the performance of your guest posts and collaborations using your tracking tools to measure the impact on your site's traffic and rankings

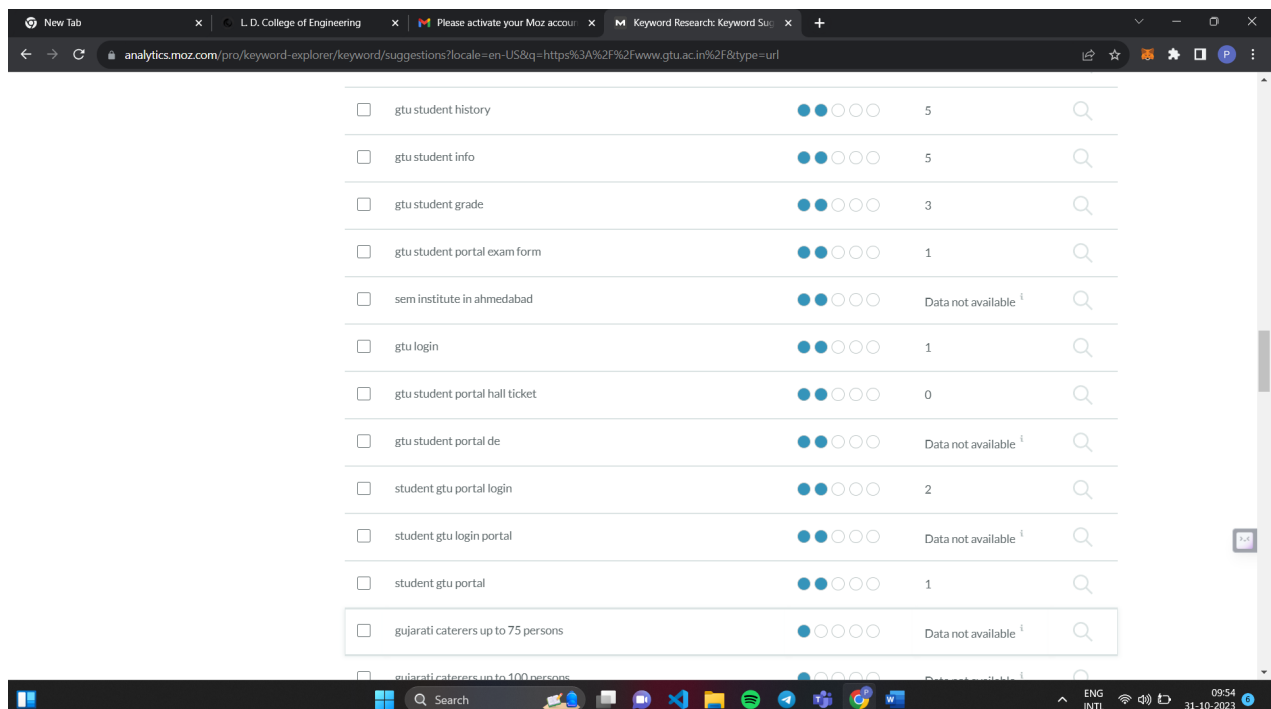
## Observations:

The screenshot displays the Moz Keyword Explorer interface. The left sidebar contains navigation links: On-Demand Crawl, Rank Checker, and Moz Local. The main content area shows 'All Keyword Suggestions' for the keyword 'https://www.gtu.ac.in/'. The table lists various keyword suggestions with their relevance scores and monthly search volumes.

Keyword	Relevancy	Monthly Volume	Search
https://www.gtu.ac.in/	●●●●●	Data not available	
gujarat university	●●○○○	641	🔍
gtu	●●○○○	950	🔍
gtu student portal	●●○○○	130	🔍
gtu.ac.in	●●○○○	5	🔍
gujarat technological university	●●○○○	292	🔍
guj	●●○○○	791	🔍
gtu portal	●●○○○	25	🔍



Keyword	Score	Volume
gtu venezuela	55	
gtu student portal gtu	1	
gtu web portal	5	
l'oreal unesco fellowship 2019 greece	27	
2019-2021 mechanical renewal form sc	27	
iitm prof fighting mathematics dept	27	
select art dbt merchant	27	
central miv graduation 2020	27	
gtu info	26	
gt cs minor	18	
gtu address	15	
student gtu	5	



Keyword	Score	Volume
gtu student history	5	
gtu student info	5	
gtu student grade	3	
gtu student portal exam form	1	
sem institute in ahmedabad	Data not available	
gtu login	1	
gtu student portal hall ticket	0	
gtu student portal de	Data not available	
student gtu portal login	2	
student gtu login portal	Data not available	
student gtu portal	1	
gujarati caterers up to 75 persons	Data not available	

**Conclusion:** In conclusion, a well-organized keyword list is a valuable tool in the world of SEO, providing a foundation for content optimization and long-term strategy. Understanding the distinction between SEO and PPC keywords is crucial for effective digital marketing efforts.

### Quiz:

1. What is PPC keyword list?
2. Difference between SEO keyword list and PPC keyword list?

### Suggested Reference:

<https://searchbusinessanalytics.techtarget.com/definition/Web-analytics>

"Keyword Research: The Definitive Guide" by Brian Dean

Web Analytics For Dummies by Jennifer LeClaire and Pedro Sostre

**References used by the students:**

**Rubric wise marks obtained:**

<b>Rubrics</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Total</b>
<b>Marks</b>						

## Experiment No: 7

### Find the Blogs Which Takes People to This Site

**Date:**

**Competency and Practical Skills:** Basic knowledge regarding Web analytics, understanding of web development, HTML, and CSS, and how to handle basic social media platforms.

**Relevant CO:** CO2

**Objectives:** (a) By analyzing the blogs that are driving traffic to your site, students can gain a better understanding of the importance of backlinks for improving their website's

search engine rankings and driving more traffic to their site.

(b) Students will develop strong research skills as they search for relevant blogs that are driving traffic to their site.

**Equipment/Tools Required:** Personal Computer, backlink analysis tool, Internet and Google Analytics

**Theory:**

#### What is a blog?

A blog (a shortened version of “weblog”) is an online journal or informational website displaying information in reverse chronological order, with the latest posts appearing first, at the top. It is a platform where a writer or a group of writers share their views on an individual subject.

#### What is the purpose of a blog?

There are many reasons to start a blog for personal use and only a handful of strong ones for business blogging. Blogging for business, projects, or anything else that might bring you money has a very straightforward purpose – to rank your website higher in Google SERPs, a.k.a. to increase your visibility.

As a business, you rely on consumers to keep buying your products and services. As a new business, you rely on blogging to help you get to potential consumers and grab their attention. Without blogging, your website would remain invisible, whereas running a blog makes you searchable and competitive.

So, the main purpose of a blog is to connect you to the relevant audience. Another one is to boost your traffic and send quality leads to your website.

#### Definition of blogging

Blogging is a collection of skills that one needs to run and supervise a blog. This entails equipping a web page with tools to make the process of writing, posting, linking, and sharing content easier on the internet.

#### What Are Backlinks?

Backlinks (also known as “inbound links”, “incoming links” or “one way links”) are links from one website to a page on another website. Google and other major search engines consider backlinks “votes” for a specific page. Pages with a high number of backlinks tend to have high organic search engine rankings.

**Why Are Backlinks Important?**

Backlinks are basically votes from other websites. Each of these votes tells search engines: “This content is valuable, credible and useful”. So the more of these “votes” you have, the higher your site will rank in Google and other search engines.

**How to make such backlinks?**

There are two ways to get a backlink: Natural way: In this way, one tries to create the best content in the market, and this content will attract different links from different domains. As in this way, you haven't created links, this is called natural way. Google highly rewards such natural links. Creating backlink: In this way, you visit various sites – guest posting sites, which allows you to post content on them and write for them, and you get a backlink from those sites. As here you create backlinks and they aren't naturally earned, this way is less preferred.

**Safety and necessary Precautions:**

1. Avoid using spammy or unethical methods such as buying backlinks or using automated tools to generate backlinks.
2. Use strong, unique passwords for your website and avoid sharing them with anyone.

**Procedure:**

- 1) Check your referral traffic: In your website analytics tool, look for the "Referral" section to see which websites are sending traffic to your site. This will give you an idea of which blogs or websites are already linking to your site.
- 2) Search for backlinks: Use a backlink analysis tool like Ahrefs, Majestic, or Moz to find backlinks to your website. This can help you identify blogs that are linking to your site, and potentially driving traffic to it.
- 3) Search for mentions: Use a tool like Google Alerts, BrandMentions, or Mention to find mentions of your brand or website across the web. This can help you discover blogs or websites that are talking about your business, even if they haven't linked to your site.
- 4) Use search engines: Use search engines like Google to search for keywords related to your business or industry. Look for blogs or websites that appear in the search results and see if they link to your site or have the potential to do so.
- 5) Engage with your audience: Engage with your audience on social media, forums, and other online communities related to your industry. This can help you discover bloggers or influencers who may be interested in featuring your business on their site.

Remember, building relationships with bloggers and website owners takes time and effort. Be patient and focus on creating quality content and engaging with your target audience, and eventually, you'll start to see traffic coming from blogs and websites that are linking to your site.

**Observations:**

You can make it easier for people to find your blog on search engines like Google and Bing when you:

- List your blog on search engines.
- Use keywords throughout your site to help it show up higher in search results.

**List your blog on search engines:**

To let search engines find your blog:

1. Sign in to Blogger.
2. In the top left, choose a blog to list.

3. From the menu on the left, click Settings.
4. Under "Privacy," turn on Visible to search engines.

### **Search Engine Optimization (SEO) tips for your blog :**

You can use relevant keywords in the titles and text on your posts and pages. You can also tell search engines which pages, posts, and links to ignore so they won't show up in search results.

#### **Add keywords to your post and page titles :**

To improve the ranking of your posts and pages in searches:

- Include keywords that explain what the post or page is about.
- Try to keep your titles under 60 characters. Short and concise titles are more readable and don't get cut off.

#### **Add headers :**

To tell search engines what your post is about, you can add headers like H1, H2, H3, and more. To add headers:

1. Sign in to Blogger.
2. In the top left, choose the blog where you want to add headers.
3. From the menu on the left, click Posts.
4. Click the title of the post you want to edit.
5. Highlight the text you want to make into a header.
6. In the menu, click Paragraph
7. Choose the type of heading you want.

#### **Make your images searchable:**

To make your images searchable and accessible to all readers, you can add a short description, alt text, or title:

1. Sign in to Blogger.
2. In the top left, choose a blog.
3. Add an image to your post and click on it.
4. Click Edit .
5. In the text box:
6. In the "alt" section: Add a long description.
7. In the "title" section: Add a short description.
8. Click Update.

**Important: You can hide posts and pages that fall under the tags you select. To block certain posts, in the post editor settings, under "Custom robots tags," turn on No index. If you don't want search engines to find certain pages or posts, you can hide them. To hide pages:**

1. Sign in to Blogger.
2. In the top left, choose a blog.
3. In menu on the left, click Settings.
4. Under "Crawlers and Indexing," turn on Enable custom robots header tags.
5. Click Home page tags, Archive and search page tags, or Post and page tags.

#### **Tell search engines not to follow certain links**

1. Sign in to Blogger.
2. In the top left, choose a blog.
3. From the menu on the left, click Posts.
4. Click the post you want to hide.
5. At the top, click Link Create/edit URL.
6. Check the box next to Add 'rel=nofollow' attribute.
7. Click OK.

**Conclusion:** In conclusion, the practical exercise provides a systematic approach to uncovering blogs and websites driving traffic to your site, crucial for improving SEO and visibility. By leveraging backlink analysis tools, mentions tracking, and search engine research, students can proactively engage with potential partners and enhance their online presence. Building and maintaining these connections should be an ongoing effort for long-term digital marketing success.

**Quiz:**

1. Give the different types of blogs.
2. How to improve blog SEO?

**Suggested Reference:**

<https://searchbusinessanalytics.techtarget.com/definition/Web-analytics>

"Keyword Research: The Definitive Guide" by Brian Dean

Web Analytics For Dummies by Jennifer LeClaire and Pedro Sostre

**References used by the students:**

**Rubric wise marks obtained:**

Rubrics	1	2	3	4	5	Total
Marks						



## Experiment No: 8

### Try Password Attack To Check The Site Is Not Vulnerable To This Attack.

**Date:**

**Competency and Practical Skills:** Basic knowledge regarding Web analytics, understanding of password cracking tools and techniques, familiarity with common password security.

**Relevant CO:** CO4

**Objectives:**

- (a) Students can learn how passwords are stored and secured by websites, and how password attacks can exploit vulnerabilities in these systems.
- (b) Students can learn the various techniques used to crack passwords, including brute-force attacks, dictionary attacks, and hybrid attacks.

**Equipment/Tools Required:** Personal Computer, Password cracking tools, Internet and Virtualization software.

**Theory:****What are password attacks?**

Password attacks are one of the most common forms of corporate and personal data breach. A password attack is simply when a hacker tries to steal your password.

Hackers know that many passwords are poorly designed, so password attacks will remain a method of attack as long as passwords are being used.

**Types of Password attacks****1. Phishing**

Phishing is when a hacker posing as a trustworthy party sends you a fraudulent email, hoping you will reveal your personal information voluntarily. Sometimes they lead you to fake "reset your password" screens; other times, the links install malicious code on your device.

Here are a few examples of phishing:

**Regular phishing.**

You get an email from what looks like goodwebsite.com asking you to reset your password, but you didn't read closely and it's actually goodwobsite.com. You "reset your password" and the hacker steals your credentials.

**Spear phishing.**

A hacker targets you specifically with an email that appears to be from a friend, colleague, or associate. It has a brief, generic blurb ("Check out the invoice I attached and let me know if it makes sense.") and hopes you click on the malicious attachment.

**Smishing and vishing.**

You receive a text message (SMS phishing, or smishing) or phone call (voice phishing, or vishing) from a hacker who informs you that your account has been frozen or that fraud has been detected. You enter your account information and the hacker steals it.

To avoid phishing attacks, follow these steps:

**Check who sent the email:** look at the From: line in every email to ensure that the person they claim to be matches the email address you're expecting.

**Double check with the source:** when in doubt, contact the person who the email is from and ensure that they were the sender.

**Check in with your IT team:** your organization's IT department can often tell you if the email you received is legitimate.

## 2. Man-in-the-Middle Attack

Man-in-the middle (MitM) attacks are when a hacker or compromised system sits in between two uncompromised people or systems and deciphers the information they're passing to each other, including passwords. If Alice and Bob are passing notes in class, but Jeremy has to relay those notes, Jeremy has the opportunity to be the man in the middle. Similarly, in 2017, Equifax removed its apps from the App Store and Google Play store because they were passing sensitive data over insecure channels where hackers could have stolen customer information.

To help prevent man-in-the-middle attacks:

**Enable encryption on your router.** If your modem and router can be accessed by anyone off the street, they can use "sniffer" technology to see the information that is passed through it.

**Use strong credentials and two-factor authentication.** Many router credentials are never changed from the default username and password. If a hacker gets access to your router administration, they can redirect all your traffic to their hacked servers.

**Use a VPN.** A secure virtual private network (VPN) will help prevent man-in-the-middle attacks by ensuring that all the servers you send data to are trusted.

## 3. Brute Force Attack

If a password is equivalent to using a key to open a door, a brute force attack is using a battering ram. A hacker can try 2.18 trillion password/username combinations in 22 seconds, and if your password is simple, your account could be in the crosshairs.

To help prevent brute force attacks:

**Use a complex password.** The difference between an all-lowercase, all-alphabetic, six-digit password and a mixed case, mixed-character, ten-digit password is enormous. As your password's complexity increases, the chance of a successful brute force attack decreases.

**Enable and configure remote access.** Ask your IT department if your company uses remote access management. An access management tool like OneLogin will mitigate the risk of a brute-force attack.

**Require multi-factor authentication.** If multi-factor authentication (MFA) is enabled on your account, a potential hacker can only send a request to your second factor for access to your account. Hackers likely won't have access to your mobile device or thumbprint, which means they'll be locked out of your account.

## 4. Dictionary Attack

A type of brute force attack, dictionary attacks rely on our habit of picking "basic" words as our password, the most common of which hackers have collated into "cracking dictionaries." More sophisticated dictionary attacks incorporate words that are personally important to you, like a birthplace, child's name, or pet's name.

To help prevent a dictionary attack:

**Never use a dictionary word as a password.** If you've read it in a book, it should never be part of your password. If you must use a password instead of an access management tool, consider using a password management system.

**Lock accounts after too many password failures.** It can be frustrating to be locked out of your account when you briefly forget a password, but the alternative is often account insecurity. Give yourself five or fewer tries before your application tells you to cool down.

**Consider investing in a password manager.** Password managers automatically generate complex passwords that help prevent dictionary attacks.

## 5. Credential Stuffing

If you've suffered a hack in the past, you know that your old passwords were likely leaked onto a disreputable website. Credential stuffing takes advantage of accounts that never had their passwords changed after an account break-in. Hackers will try various combinations of former usernames and passwords, hoping the victim never changed them.

To help prevent credential stuffing:

**Monitor your accounts.** There are paid services that will monitor your online identities, but you can also use free services like [haveIbeenpwned.com](https://haveibeenpwned.com) to check whether your email address is connected to any recent leaks.

**Regularly change your passwords.** The longer one password goes unchanged, the more likely it is that a hacker will find a way to crack it.

**Use a password manager.** Like a dictionary attack, many credential stuffing attacks can be avoided by having a strong and secure password. A password manager helps maintain those.

## 6. Keyloggers

Keyloggers are a type of malicious software designed to track every keystroke and report it back to a hacker. Typically, a user will download the software believing it to be legitimate, only for it to install a keylogger without notice.

To protect yourself from keyloggers:

**Check your physical hardware.** If someone has access to your workstation, they can install a hardware keylogger to collect information about your keystrokes. Regularly inspect your computer and the surrounding area to make sure you know each piece of hardware.

**Run a virus scan.** Use a reputable antivirus software to scan your computer on a regular basis. Antivirus companies keep their records of the most common malware keyloggers and will flag them as dangerous.

### Safety and necessary Precautions:

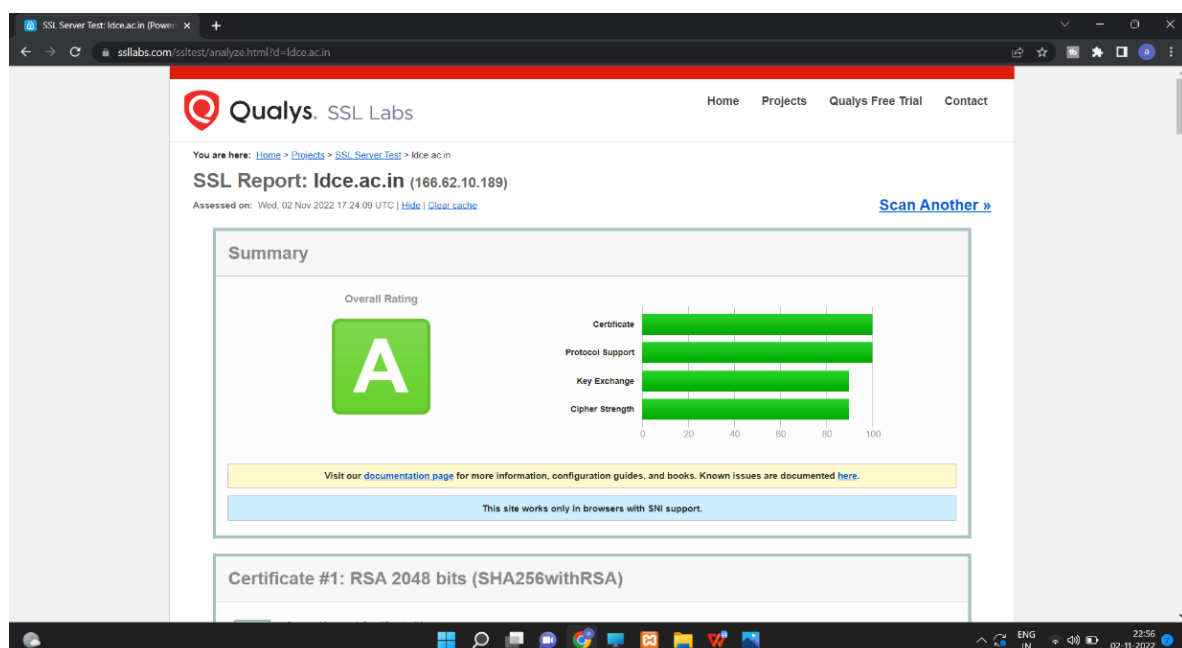
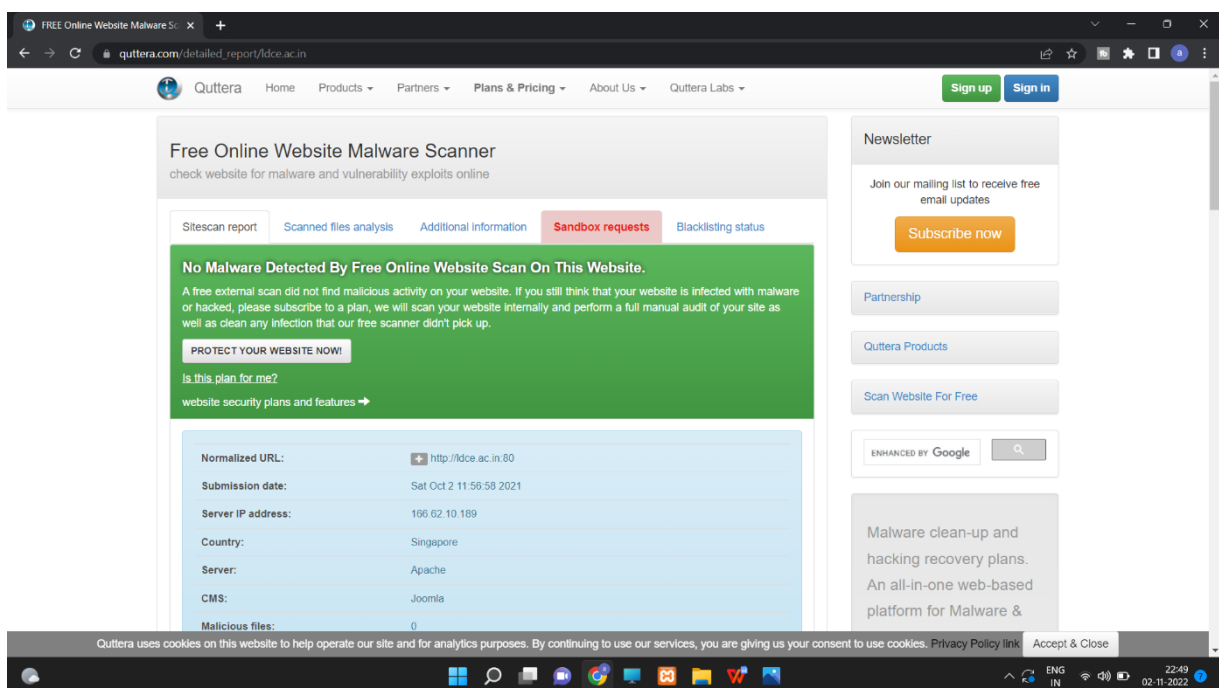
1. Before conducting any password attack, make sure to take backups of any important data or settings, and create restore points or snapshots of your system.
2. Avoid accessing, modifying, or sharing any confidential or private information obtained during the password attack, and handle all information obtained with utmost confidentiality and professionalism

### Procedure:

- 1) Obtain proper authorization: Obtain explicit written permission from the website owner or administrator to perform a password attack.
- 2) Identify the target: Identify the specific website or system that you are authorized to test for password vulnerability.
- 3) Gather information: Gather as much information as possible about the target system, including the operating system, web server software, and any other relevant details that could help in the password attack process.
- 4) Identify attack vectors: Identify potential attack vectors that could be used to exploit the system's password vulnerability. This could include weak passwords, default usernames and passwords, or other vulnerabilities.
- 5) Choose password cracking tools: Choose appropriate password cracking tools and software based on the type of attack vectors identified. Some of the popular password cracking tools include John the Ripper, Hashcat, and Brutus.
- 6) Prepare wordlists: Prepare wordlists containing potential passwords that the password cracking tool will use to attempt to crack the password.

- 7) Perform the password attack: Run the password cracking tool using the prepared wordlists and attack vectors to attempt to crack the password. Monitor the progress of the attack and adjust the parameters as needed.
- 8) Analyze the results: Analyze the results of the password attack, including any successful or unsuccessful attempts to crack the password, and any vulnerabilities identified in the process.
- 9) Document and report findings: Document the entire password attack process and any findings, including successful and unsuccessful attempts, and report them to the website owner or administrator in a clear and concise manner.
- 10) Follow responsible disclosure: If any vulnerabilities are identified during the password attack, follow responsible disclosure practices by reporting them immediately to the website owner or administrator and refrain from disclosing or exploiting them further without proper authorization.

## Observations:



By

Testing it with the help of online tools it found that ldce.ac.in is not vulnerable to attack.

**Conclusion:** Use password attack tools to simulate brute-force attacks and identify any weaknesses in your website's password security. This conclusion is concise and informative, and it accurately reflects the purpose of the practical. It also highlights the importance of password security for websites.

**Quiz:**

1. Why do we use different types of attacks on our website?
2. Which attack is best to check the vulnerability of the website?

**Suggested Reference:**

<https://searchbusinessanalytics.techtarget.com/definition/Web-analytics>

"The Basics of Password Cracking" by ElcomSoft Co. Ltd

Web Analytics For Dummies by Jennifer LeClaire and Pedro Sostre

**References used by the students:**

**Rubric wise marks obtained:**

Rubrics	1	2	3	4	5	Total
Marks						

## Experiment No: 9

### Measure the Most Important Metrics used for E-mail Marketing Analytics

**Date:**

**Competency and Practical Skills:** Basic knowledge regarding Web analytics, Knowledge of HTML and CSS, familiarity with statistical analysis tools and techniques.

**Relevant CO: CO3**

**Objectives:** (a) Students will learn about the various metrics used to measure the effectiveness of email marketing campaigns.  
(b) Students will gain practical experience using email marketing software and tools to set up and send campaigns, track metrics, and analyze data.

**Equipment/Tools Required:** Personal Computer, Email marketing software, Internet and Web analytics software

**Theory:****What is E-mail Marketing?**

Email marketing is a form of digital marketing that involves sending commercial messages or promotional content to a group of people using email. It is one of the most effective and cost-efficient ways to reach out to a targeted audience, engage with them and drive business growth.

Email marketing can be used for a variety of purposes, such as promoting new products, increasing sales, building brand awareness, educating customers, and nurturing leads. The success of an email marketing campaign is dependent on several factors, including the quality of the email list, the relevance and effectiveness of the email content, and the timing and frequency of the emails.

To be successful in email marketing, it is important to follow best practices such as personalizing emails, creating compelling subject lines, segmenting the email list, using clear calls to action, and ensuring emails are mobile-friendly. Additionally, email marketing metrics such as open rate, click-through rate, conversion rate, and revenue generated should be tracked and analyzed to optimize future campaigns.

Overall, email marketing can be a highly effective tool for businesses to connect with customers, build relationships, and drive revenue growth.

There are several important metrics that are commonly used to measure the effectiveness of an email marketing campaign. These include:

- 1) Open rate: This metric measures the percentage of recipients who opened your email. A high open rate indicates that your subject line and pre-header text were engaging and effective.
- 2) Click-through rate (CTR): This metric measures the percentage of recipients who clicked on a link within your email. A high CTR indicates that your content was relevant and engaging.

- 3) Conversion rate: This metric measures the percentage of recipients who took a desired action, such as making a purchase or filling out a form, after clicking on a link in your email.
- 4) Bounce rate: This metric measures the percentage of emails that were undeliverable and returned to the sender. A high bounce rate can indicate issues with email list quality or email deliverability.
- 5) Unsubscribe rate: This metric measures the percentage of recipients who unsubscribed from your email list after receiving your email. A high unsubscribe rate can indicate issues with email content or frequency.
- 6) Revenue generated: This metric measures the amount of revenue generated by your email campaign. This metric is particularly important for e-commerce businesses.
- 7) Forward/Share rate: This metric measures the percentage of recipients who forwarded or shared your email with others. A high forward/share rate indicates that your content was engaging and shareable.

By measuring these metrics and analyzing the data, you can gain insights into the effectiveness of your email marketing campaigns and make data-driven decisions to optimize your future campaigns.

**Safety and necessary Precautions:**

- 1) Make sure that all sensitive data and information related to your email marketing campaigns are stored securely and protected from unauthorized access.
- 2) Regularly backup all data related to your email marketing campaigns to prevent data loss in case of a system failure.

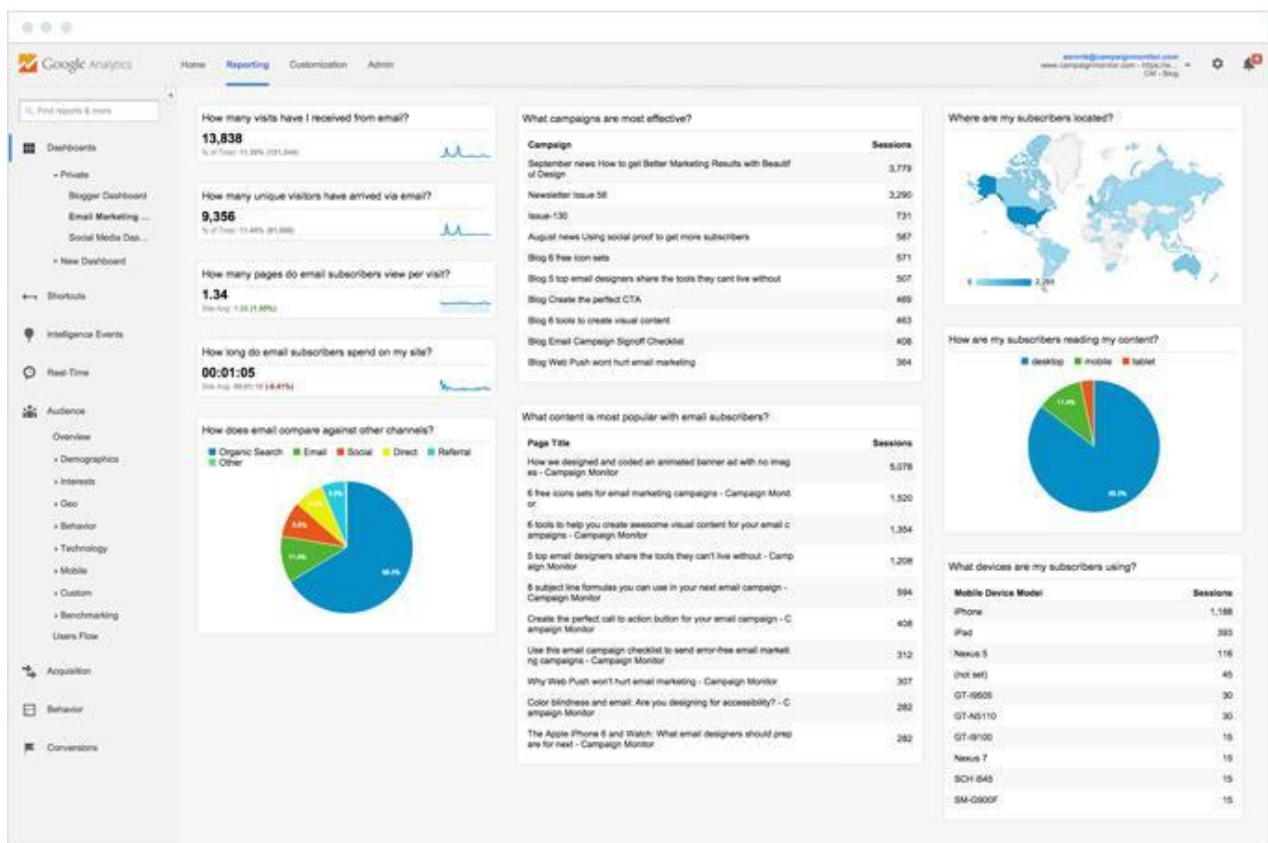
**Procedure:**

- 1) Identify the email marketing metrics to measure: Determine which email marketing metrics are most important for your business goals. These may include open rate, click-through rate, conversion rate, bounce rate, unsubscribe rate, revenue generated, and forward/share rate.
- 2) Set up email marketing analytics tracking: Set up tracking codes or tags for your email marketing campaigns to accurately track metrics. This may include using UTM parameters or setting up tracking pixels in email messages.
- 3) Send out email campaigns: Send out email campaigns to your email list, making sure to segment the list as appropriate.
- 4) Measure open rate: Measure the open rate by dividing the number of emails opened by the total number of emails sent. This can typically be tracked using email marketing software.
- 5) Measure click-through rate: Measure the click-through rate by dividing the number of clicks on links within the email by the total number of emails sent. This can typically be tracked using email marketing software.
- 6) Measure conversion rate: Measure the conversion rate by dividing the number of recipients who took a desired action, such as making a purchase, by the total number of emails sent. This can typically be tracked using email marketing software or web analytics tools.
- 7) Measure bounce rate: Measure the bounce rate by dividing the number of undeliverable emails by the total number of emails sent. This can typically be tracked using email marketing software.
- 8) Measure unsubscribe rate: Measure the unsubscribe rate by dividing the number of recipients who unsubscribed from the email list by the total number of emails sent. This can typically be tracked using email marketing software.

- 9) Measure revenue generated: Measure the revenue generated by tracking the amount of revenue generated from email marketing campaigns. This may require integrating with e-commerce platforms or other business systems.
- 10) Analyze data and optimize campaigns: Analyze the data collected and use it to optimize future email marketing campaigns to improve performance.

By following this procedure and tracking the most important email marketing metrics, businesses can gain valuable insights into the effectiveness of their email marketing campaigns and make data-driven decisions to improve their results.

## Observations:



**Conclusion:** Track open rates, click-through rates, conversion rates, and unsubscribe rates to measure the performance of your email marketing campaigns. This conclusion is concise and informative, and it accurately reflects the most important metrics used for email marketing analytics. It also highlights the importance of tracking these metrics over time to identify areas for improvement.

## Quiz:

1. How can you track email engagement beyond traditional metrics such as open and click-through rates?
2. How can you track and measure the impact of email marketing on sales and revenue?

## Suggested Reference:

<https://searchbusinessanalytics.techtarget.com/definition/Web-analytics>



**Yug Khokhar**

**200280116059**

"The Ultimate Guide to Email Marketing Analytics" by Campaign Monitor

Web Analytics for Dummies by Jennifer LeClaire and Pedro Sostre

**References used by the students:**

**Rubric wise marks obtained:**

<b>Rubrics</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Total</b>
<b>Marks</b>						