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Effects of Online Games on the Academic Performance of Students: An Analysis

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Abstract
The concept of online gaming and its addiction become a big concern in recent time because of ease of internet and fast access to such online games. Really this addiction might change any individual's behaviour significantly. Prolonged use of such online gaming may lead to social, psychological and physical problems. Which further results into many disorders i.e. deteriorate physical activities, irregular sleep habit, impatience, technology dependency etc. The study's objective is to determine whether online gaming may have any effect on the student's academic performance or not. The Study aims to particularly stats the demographic type profile of the respondents (gender, age), the kind of computer games they played, and the total hours the respondents spent playing online games. In the current study the researchers have adapted only quantitative methodology and the data is being collected through a survey method. A self-administered and structured questionnaire was circulated to targeted respondents and data was collected from by Google Form. Data analysis part done with the frequency tables, the pie charts, the bar graphs and one sample t-test with the help of SPSS version 24. Based upon the result, it being evident that there is no significant difference among the mean sample and population mean in reference to the effect of online games and student's academic performances.
***Keywords**: Online Games, Academic Performance, Perception, Game Addiction*

1. Introduction

The online gaming industry has been started around since 1970 (World Economic Forum, 2020). MUDs are a classic example of early online games. The first MUD, MUD1, was developed in 1978 and was initially restricted to an internal network until connecting to ARPANet in 1980. In Egyptian dynasties, the idea of games was originally discovered. People became completely obsessed with the Snakes game on Nokia phones in 1990 due to mobile phone penetration. The video game Pong was released in 1970, while the first commercial arcade game, Spacewar, was created by Nolan Bushnell and Ted Dabney in 1971. First commercial online role-playing game released in 1984.(Cassidy Ward, 2024) Online gaming culture in the 2000s attracted consumers to digital platforms mostly through social games.

In absence of proper knowledge and poor internet access in the rural side areas, the Indian gaming market is less developed than other developed nations like the US. India's online market grew at a CAGR of 38% between 2017-2020, as opposed to 8% in China and 10% in the US. (Pooja Yadav, 2023). Many Indians began investigating digital platforms for learning and sharing online games like Mafia Wars, Farmville, Candy Crush, and PUBG on Facebook Casual, mid-core, and AAA game titles make up one of the main gaming series in India. While mid-core games like Mobile India and Free Fire keep players interested in Battlegrounds with an average daily playtime of 80 minutes and promote in-app purchases for revenue generation.

The Indian gaming industry is ranked as the fast-growing segment among the Indian entertainment and media sector all across. With a CAGR of around twenty percent, the report indicates that this gaming market is possibly to the worth of 7.5 billion USD by the end of financial year 2028. (Tanushree Basuroy, 2024).

The Indian Games Industry and Trade Association (iGITA), the nation's first exclusive gaming industry association and self-regulatory charter for online gaming, was established in May 2016 by India's top gaming businesses. Another organization, the "All India Gaming Federation" (AIGF), was established along-with the aim of regulating the online rummy market within India. It basically collaborates with all of its stakeholders to foster the ideal atmosphere for the expansion of the online rummy sector. The recent Budget 2022–23 address by the Union Finance Minister highlighted the value of India's mobile gaming market and announced the creation of an Animation, Visual, Gaming, and Comics (AVGC) promotion task force along with an aim of turning India into a hub for game production and gaming services on a worldwide scale Initiative adopted for Research in Digital Gaming the Department of Science and Technology's Science and Engineering Research Board (SERB) Promotion Task Force for AVGC The Promotion Task Force for

Animation, Visual Effects, Gaming, and Comics (AVGC) was founded by the "Ministry of Information and Broadcasting" (AVGC Promotion Task force, 2022).
The Indian AVGC industry has the capacity to promote "Make in India" and "Brand India," according to the government. India might control 5% (or US$ 40 billion) of global GDP by 2025 The Indian online gaming sector is also subject to a number of challenges, including low customer retention rates, ambiguity about the KYC procedure, increasing risk of fraud, and lack of technical knowledge. As technology has advanced thanks to the Internet, the online gaming market in India has grown up with a satisfactory growth rate and growing gradually.

2. Review of Literature

In their research, Kakkar Nidhi et al. (2015) have narrated about the usefulness of internet and its acclaimed use by teachers, researchers and students. They have tried to examine the level where up-to internet addiction can harm the student's academic and mental health. They have identified the different levels and the usage patterns which can be accepted as dots of internet addictions among the students.
Rajathi V. M. Anitha& Ravisankar S. (2022), have discussed about the level of addiction for online games among the students and its impact on them with their academic output.
Buenaventura Maui (2022), discussed about the online game playing effect on the school student's academic learning. The study reveals that there is no much effect of online game playing among the senior school students and it don't hamper their important subject's learning. Such students still getting satisfactory grade and they played online just to prevent themselves from stress and get relaxed not for any other intention.
In their, study, Cañares Nora C et. al. (2023) have discussed about the potential of online- games in relation to enhance the teaching-learning along with student's academic performance. They have conducted a test upon students to get the effect of such games on their academic merit. They have identified the significant differences in between the students supported with online games in education and not so. Researchers have also indicated to the government to support economically the secondary school in regard to online games as an innovative method of teaching-learning practices.
Cabrillos Lenny E. et. al. (2023), have tried to tell the use of online gaming in education, especially on student's academic performance during COVID 19. They have tried to get the nodes between online learning and student's academic performance in terms of intellectual, social, academic and health aspects. The study indicates that online game playing don't have a substantial association along with the student's academic success.
B. Xavier Prince et al. (2023), have explored about the online gaming and its addiction. According to them, this addiction can be resulted into the social, physical and psychological problems of an individual. Prolonged use of such can makes the situations too worst. Which may further develop into the stress and anxiety.

3. Objectives of the Current Research

- To study how online gaming affected students' academic performance in the College.
- To study whether there exists a significant difference within the two groups of respondents in terms of academic performance or not.

4. Research Methodology:

The researchers used the descriptive-correlational research design. This design depicts the profile of respondents and determined the difference in academic performance of players of online games. The sample size is being considered 200 for the study from the sampling area, Dogra Degree College, Jammu. The purposive sampling method is being used in collecting the data. The researcher collected data for the respondents' profiles using questionnaire through Google form using Likert scale to study the online game's effect on students' academic performance.

Research Hypothesis: There is no discernible disparity within two groups of respondents about the time that they spend while playing the online games and how well they perform in Academics.

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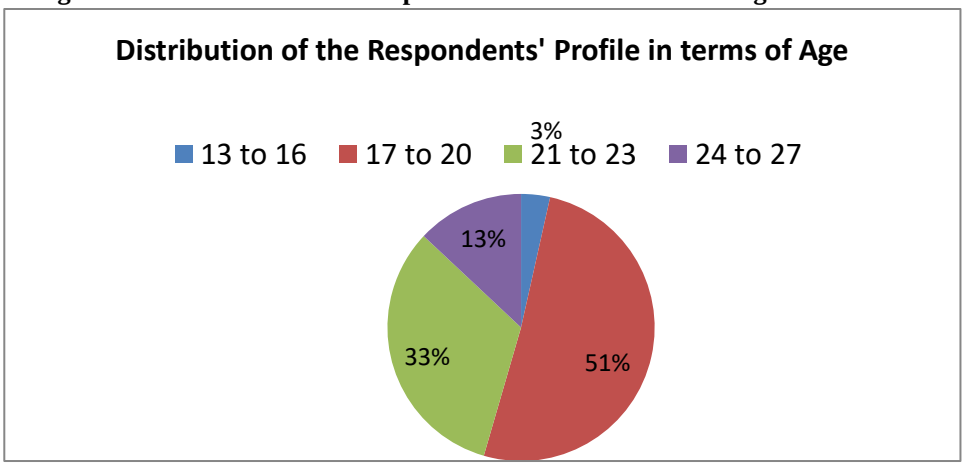
5. Data Analysis and Interpretation

Table 1: Distribution of the Respondents' Profile in terms of Age

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	13 to 16	7	3.5	3.5	3.5
	17 to 20	102	51.0	51.0	54.5
	21 to 23	65	32.5	32.5	87.0
	24 to 27	26	13.0	13.0	100.0
	Total	200	100.0	100.0	

Figure 1: Distribution of the Respondents' Profile in terms of Age



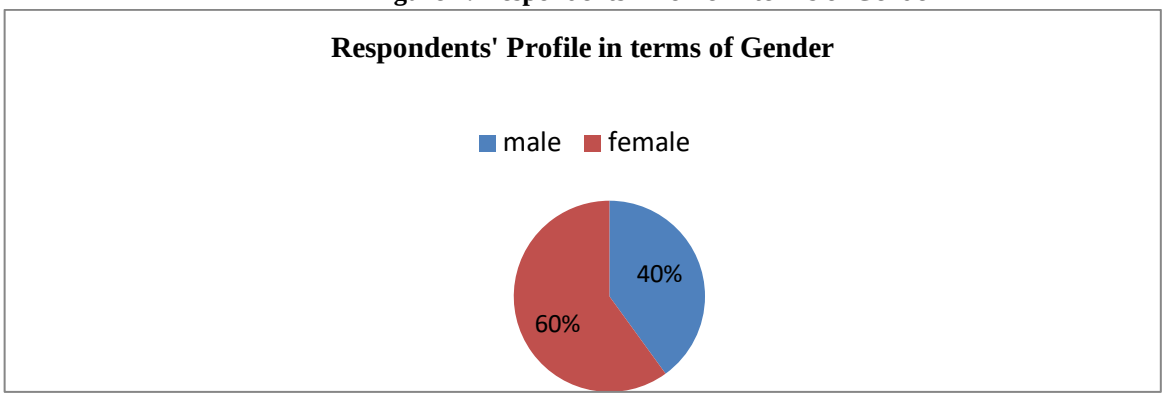
As per the above table 1 and figure 1, The percentage distribution of the respondent profile by age is shown have the largest frequency on age, which ranges from 17 to 20 years old with 102 respondent others categories of age group belonging to 51 %, 33%, 13% and 3% respectively. As per the research, the respondents majorly are young generation involved into it.

Table 2: Distribution of the Respondents' Profile in terms of Gender

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	120	60.0	60.0	60.0
	male	80	40.0	40.0	100.0
	Total	200	100.0	100.0	

Figure 2: Respondents' Profile in terms of Gender



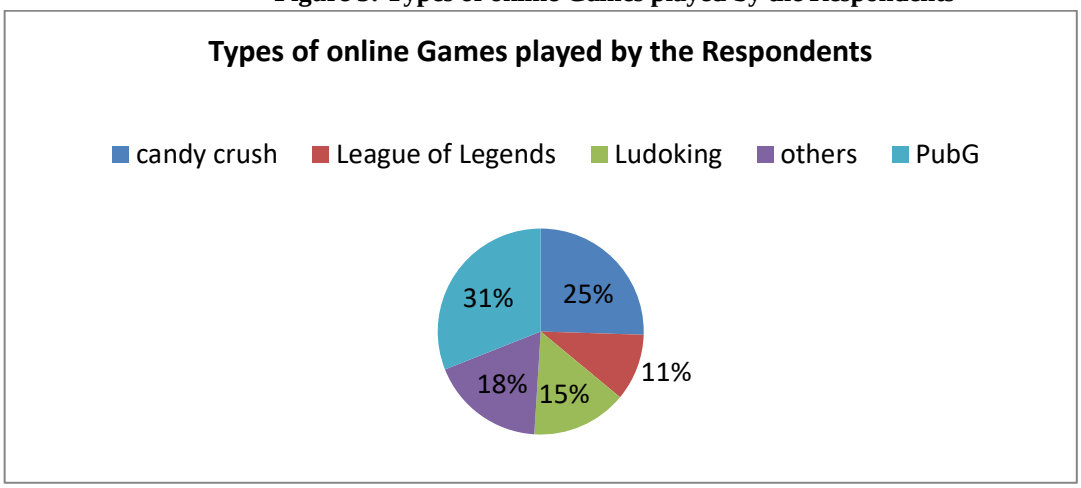
In the above table 2 and Figure 2, It demonstrates the respondent's number and percentage distribution of respondent's two categories according to Gender The table shows that 80 students are male comprising of 40%, whereas 120 are female. Additionally, the female has the highest 60%. According to this, female is more oriented comparing to male to play online game.

Table 3: Types of Computer Games played by the Respondents

Types of games

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	candy crush	51	25.5	25.5	25.5
	League of Legends	21	10.5	10.5	36.0
	Ludoking	30	15.0	15.0	51.0
	others	36	18.0	18.0	69.0
	PubG	62	31.0	31.0	100.0
	Total	200	100.0	100.0	

Figure 3: Types of online Games played by the Respondents



The above Table 3 and Figure 3 demonstrates a kind of online gaming they are playing as the percentage of whole. It represents that PubG 62%mostly played by students after the candy crush next to their interest list.

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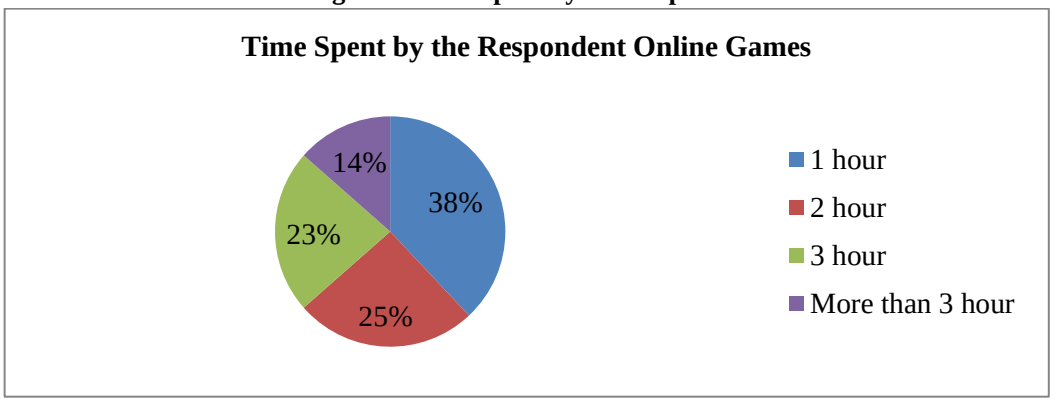
Table 4: **Number of hours played**

Number of hours played

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 hour	76	38.0	38.0	38.0
	2 hours	51	25.5	25.5	63.5
	3 hours	46	23.0	23.0	86.5
	More than 3 hours	27	13.5	13.5	100.0
	Total	200	100.0	100.0	

Figure4: Time Spent by the Respondent Online Game



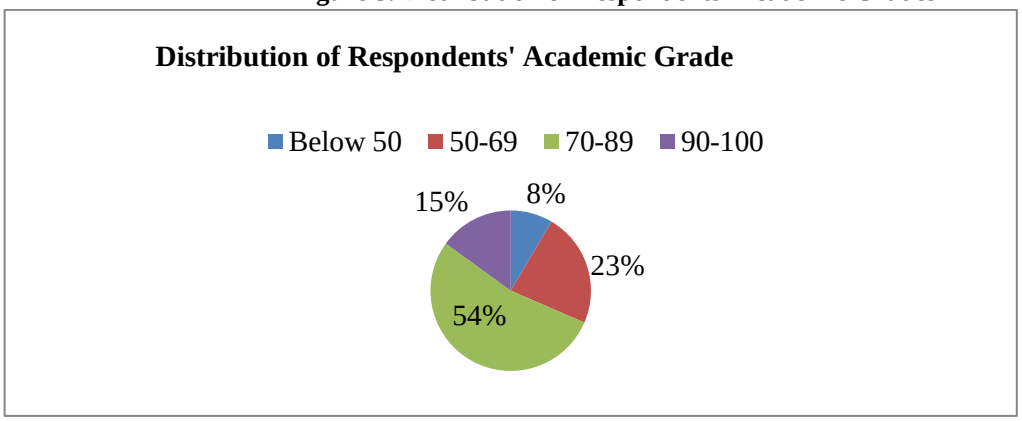
The above Table 4 and Figure 4 depicts how frequently and in what proportions the respondent spent time in playing the online games. It demonstrates that majorly the respondents play the online games for a one-hour time duration

Table 5. Distribution of Respondents' Academic Grades

Percentage of distribution of responded academic grade

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	50-69	46	23.0	23.0	23.0
	70-89	107	53.5	53.5	76.5
	90-100	30	15.0	15.0	91.5
	below 50	17	8.5	8.5	100.0
	Total	200	100.0	100.0	

Figure 5. Distribution of Respondents' Academic Grades



The above Table 5 and Figure 5 indicates the percentage distribution of the academic grades for the two groups of respondents. The most frequent academic grades, which range from 70 to89 are described as very satisfactory. According to this research, respondents are performing in a good way in the class academically while playing online games.

- **Online gaming effect analysis by SPSS version 24**

Table 6. One-Sample Statistics regarding Change the behaviour of student

	N	Mean	Std. Deviation	Std. Error Mean
Change the behaviour of student	200	3.035	1.2375	.0875

Table 7. One sample t test Result

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Change the behaviour of student	.400	199	.690	.0350	-.138	.208

In table 7, T value i.e. 0 .400 < critical value 1.980 sample mean and population mean are not significantly different whereas the P value i.e. 0.69 > .05 sample mean and population mean are not significantly different. The Confidence interval include negative lower value and positive upper value less than zero hence sample mean and population mean are not significantly different.

Table 8:One-Sample Statistics regarding Result in loss the appetite of eating

	N	Mean	Std. Deviation	Std. Error Mean
Result in loss the appetite of eating	200	3.015	1.2818	.0906

Table 9: One sample t test Result

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Result in loss the appetite of eating	.165	199	.869	.0150	-.164	.194

As per table 9, T value i.e.0.165 <1.980 critical value. Hence sample mean is not significantly different from population mean. The P value i.e. 0.869>.0.05Hence sample mean is not significantly different from population mean. Whereas Confidence interval include negative lower value and positive upper value less than zero hence sample mean and population mean are not significantly different.

Table 10:One sample Statistics regarding Increases self confidence among student

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Increases self confidence among student	200	3.045	1.2372	.0875

Table 11:One sample t test

One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Increases self confidence among student	.514	199	.608	.0450	-.128	.218

The Table 11 shows that T value i.e. 0 .514 < critical value 1.980 sample mean and population mean are not significantly different. The P value i.e. 0.608 > .05 sample mean and population mean are not significantly different. The Confidence interval include negative lower value and positive upper value less than zero hence sample mean and population mean are not significantly different.

Table 12:One sample Statistics regarding Enhancing Analytical thinking among students

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Enhancing Analytical thinking among students	200	3.125	1.2235	.0865

Table 13:One sample t test

One-Sample Test

	Test Value = 3					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Enhancing analytical thinking among students	1.445	199	.150	.1250	-.046	.296

The Table 13 shows T value i.e.1.445 <critical value 1.980 sample mean and population mean are not significantly different. The P value i.e. 0.150 > .05 sample mean and population mean are not significantly different. The Confidence interval include negative lower value and positive upper value less than zero hence sample mean and population mean are not significantly different.

Table 14:One sample Statistics regarding decrease academic performance of student

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Decrease academic performance of student	200	2.965	1.2616	.0892

Table 15:One sample test

One-Sample Test

	Test Value = 3					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper

Decrease academic performance of student	-.392	199	.695	-.0350	-.211	.141

The Table 15 shows that T value i.e. -.392 < critical value 1.980 sample mean and population mean are not significantly different. The P value i.e. 0.695 > .05 sample mean and population mean are not significantly different. The Confidence interval include negative lower value and positive upper value less than zero hence sample mean and population mean are not significantly different.

Table 16. One sample Statistics regarding Release of aggression and frustration among students

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Release of aggression and frustration among students	200	3.385	1.3020	.0921

Table 17:One sample test

One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Release of aggression and frustration among students	4.182	199	.000	.3850	.203	.567

The Table 17 shows that T value i.e.4.182 >critical value 1.980 sample mean and population mean are significantly different. The P value i.e.0.0 < .05 sample mean and population mean are significantly different. The Confidence interval include positive lower value and positive upper value does not include zero hence sample mean and population mean are significantly different.

Table 18:One sample Statistics regarding Spent less time with family

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Spent less time with family	200	3.275	1.2757	.0902

Table 19.One sample test

One-Sample Test

	Test Value = 3				
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference

					Lower	Upper
Spent less time with family	3.048	199	.003	.2750	.097	.453

The Table 19 shows that T value i.e. 3.048 >critical value 1.980 sample mean and population mean are significantly different. The P value i.e. 0.0 03< .05 sample mean and population mean are significantly different. The Confidence interval include positive lower value and positive upper value hence sample mean and population mean are significantly different.

6. Conclusion

Based upon the result, it is concluded that there was no significant difference between the mean sample and population mean. Majority of respondents are young generation involved in playing online games for 1-hour time duration. The most frequent academic grades, which range from 70 to 89 are described as very satisfactory According to this research, respondents are still showing well in class academically while playing online games. As per table 7, it beingfound that the population mean and sample are not significantly different whereas in case of release of aggression and frustration among student's result are completely opposite i.e. the sample mean are also not the significantly different population.

It will help in comprehending the ill effects of online gaming like Result in loss the appetite of eating, Change the behaviour of student, decrease academic performance of student, enhancing analytical thinking among students, Increases self confidence among student. The current research-based study also has some limitations. There is some another specific restriction on the current investigation. The current study's sample size was rather small. Therefore, the results for a big sample may differ. Additionally, the study was limited to the Jammu district only.

7. Significance of the study

The current study has a valid significance for not only the students but also to the multiple stakeholders i.e. students, teachers, and parents. The students will get to know how to use online games in their study effectively and positively in a coordination with their teachers respectively. That practice may enhance their academic performance. From the point of view of parents, they can get to know about their ward's routine gaming activity and it can help them in facilitation for good mobile/online gaming platform which can be an added thing for their ward's routine study. From the teacher's perspective, teachers can analyse and get to know which online gaming platforms are good academically or not for the students. Additionally, they can also asses the student's academic performance in a better way than earlier because of technology involvement.

8. Implications and Recommendations

The current research has multiple implications for multiple stakeholders i.e. teachers, students, parents, marketers and policy makers. The teachers surely will get to know the new tools and techniques while monitoring students playing online games along with their study. That process can be an added integration to the academic performance of the students. The balanced digital engagement surely encourages the students to do study by some online gaming module too. Teachers will also be having the leverage to monitor and track the student's routing academic performance by partially engaging them into educational online gaming modules.

The policy drafters and the core marketers surely would get a chance to know the student's changing requirements and try to map these with online gaming products accordingly. That can lead a healthy balance between student's physical and online study. Additionally, parents can also get to know the positive and negative impact of use of online gaming in their ward's study and academic performance. They will also easily know the online gaming's merit and demerits of online gaming and its impact on their ward's mental health and wellbeing.

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