Randomized Question Paper Generation

¹Shakeel Ahmad Dar, ²Sana Showkat

¹IT Cell Incharge, J&K State Board of Technical Education, *Jammu & Kashmir, India* ².J &K State Board of Technical Education, *Jammu & Kashmir, India*

ABSTRACT

Knowledge is the technology that rules the world! However financial power can be used for many tasks to gain that knowledge through unscrupulous means. The more crafty use of monetary means can be seen in schools/colleges when juveniles make every effort to gain triumph though bigoted ways. This cognizance led to the development of generating question papers, arbitrary to the question paper setter. Here just the exclusive members were aware of the query of the paper. Thus a number of crevices where filled with the functioning of this system.

Key Words: Question Paper Generation; Databases; SQL; Optimization Algorithm

INTRODUCTION

The preeminent purpose of creation of the Randomized Question Paper system was to bridge the gap which led biased accomplishment. A governing body is kept in charge of selecting the teachers, of their corresponding subjects, to be capable of using the interface .This smart question paper generating system allows preferred teachers to submit their pre-designed questions of related subject, in a specified amount of time (after which they would be logged out and cannot log-in by their own), through an online portal from where the bulk of the data gets stored into the database.

A cardinal authority is then eligible to generate a question paper, where none of the questions bear any association to their submitter as the series of questions published are picked unplanned and casually however with respect to the statistic figure.

A degree of hardness and ease is correlated with each question so as to achieve uniformity that is, the paper thus generated can neither be too easy nor too difficult. This deduction was observed by setting three different levels, namely Difficult, Moderate and Easy, each having a designated sum linked to it. Upon having the said weightage achieved while formation of the paper, no more questions from that level would further be selected.

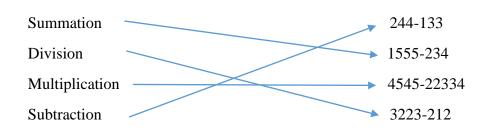
The most thought-provoking and compelling element of this system is of its "Dynamic question generation". This can be illustrated with a simple example:

Question: Find the sum of 110 and 34.

The underlined articles in the above question suggest that their values can be changed. The question maker provides a group of values at the creation of the question; the numeric value can be generated from a range provided with a random increment or decrement, not decided by the question maker.

Set of static functions

Range of values



CONSTITUTION

www.ijcrt.org

JKSBOTPE J&K State Board of Technical Education			
	LOGIN		
	Forget Password		
© Copyright Jammu & Kashmir State Board Of Technic	al Education	MAINTAINED by ITCELL @ JKSBOTE	Terms & Conditions

Fig1: The login page for all users

1. Defining a platform for curriculum entry

The structure was synthesis of various computer languages such as PHP, JavaScript, HTML, Jquery, CSS, and SQL. The germinal stage was to create an online platform from where the syllabus of the colossal number of subjects was to be added. This led to development of "online syllabus entry". Here data entry operators would be handed over a hard copy of the syllabus (as decided by the governing authority) and thus the doorway opened towards the approach of question making.

This portal consisted of selecting the Branch (here various discipline such as Computer sciences, Electrical engineering, Fashion technology and many more), followed by selection of semester (consisting of 6) and lastly followed by selection of subject. Once all the selection had been done, the operator needed to specify the number of units of that particular subject. A keen observation had to be made on part of the data entry operators that the number of marks of each unit should be a multiple of five and the summation of the marks of all the units should be equal to hundred, not more, not less! Had there been mistakes while administering the marks, an alert would popup notifying of the occurrence of mistake. Thus this concludes the initial stage of formulation of question bank.



Fig 2. First Interface for data entry operators and process to add details of units

Subject Name Subject ID Semester 15 20 30 26 30 37 30 4 30 4 40 50 50 Unit1 85 90 95 90 <th></th> <th>CASE OTTE Board of Technical Education</th> <th></th> <th></th> <th></th> <th>Home</th> <th>Logout</th>		CASE OTTE Board of Technical Education				Home	Logout
30 4 35 4 35 ▼ Unit1 65 50 55 60 75 Sub Topics 85 90 90 90 90 90 90 90 100 Weightage 5 Unit2		10	Subject Name	Subject ID	Semester		
A 35 4 35 4 45 50 50 50 50 50 50 50 50 70 75 80 75 90 95 100 90 Weightage 5 100 Vinit2		15 20 25	STUDENT CENTRED ACTIVITIES	ELEE1699NCS	6		
40 40 40 40 40 40 40 40 40 40	itumber of en	30					
Sub Topics 85 90 95 100 Weightage 5	Title	45 50 55 60 65 70 75					
100 Weightage 5 ▼ Unit2	Sub Topics	85					
		100					
1 AUE							
	Title						

Fig 3. Second Interface for data entry operators and process to add details of units

2. Selection of teachers for composing questions

The prime speculation was to know which teachers are designated to which subjects and to assign them the task of submitting their pre-designed questions in the portal. A member of the organization dealt with the exercise of assigning the teachers to their corresponding subjects. The member also had the authority to remove already assigned teachers, if any complication arises. User ID's and passwords were provided to the teachers through OPT generation.

JKSBOTE JBK State Board of Technical Education	Home Logout
> Assign subject to faculty	
> View faculty assigned	
> View syllabus written	
© Copyright Jammu & Kashmir State Board Of Technical Education	MAINTAINED by ITCELL @ JKSBOTE Terms & Conditions

Fig 4. Interface for the authority assigning teachers, removing and checking the syllabus written

JKSBO JRK State Board of Technical	Education				Home Logout
		Assigning subject to	o teacher		
		Computer Engineering	•		
		3	•		
		COMPUTER PROGRAMMING USING	GC V		
		Shakeel Ahmad	¥		
		Assign			
© Copyright Jammu o	& Kashmi	r State Board Of Technical Education	MAINTAIN	ED by ITCELL	@ JKSBOTE Terms & Conditions
		Fig 5. Interface for s	ubiaat assignme	nt	
		Fig 5. Interface for s	ubject assignine	JIII	
JKSBOTT	2				Home Logout
J&K State Board of Technical Educati					
		View and Remove tea	achers		
		Civil Engineering			
	Semester	Subject	Teacher	Remove	
	3	FLUID MECHANICS	MEHNAZA AKHTER		
	6	EARTHQUAKE RESISTANT BUILDING CONSTRUCTION	MUDASIR AZIZ		
	6	STEEL STRUCTURES DESIGN	ASRAR AHMAD NAJAR		
		Computer Engineering			
		Semester Subject	Teacher Remove		
		5 INTERNET AND WEB TECHNOLOGIES S	Sana Showkat		
		Remove			

Fig 6. Interface for modifications in subject assignment

3. Teachers logging into their accounts

Upon logging in, the teachers get a view of two sections, one where they have to plan/ structure their questions and another where they get a preview of their submitted questions.

The teacher begins by selecting one of the subjects from a list of already assigned subjects. Upon selection the number of units appear in dropdown with each unit corresponding a hint to it, that is what are the contents of this unit.

The question are divided into two parts, one consisting of those questions which are static in nature or in other words the theoretical questions and the other being dynamic in nature or numerical types. The writing of questions is done in a cascading way with consideration of the marks of the question right from the beginning. The teacher has to select a difficulty level out of three levels, namely Difficult, Moderate and Easy.

				View question history!	
Semester	Subject Name	S	Semester	Subject Name	
5	INTERNET AND WEB TECHNOLOGIES	5	5	INTERNET AND WEB TECHNOLOGIES	

Fig.7. Login page of teacher

🗟 JKSBOTE		Home Logout
J&K State Board of Technical Education		
	Subject Name Subject ID Semester	
	INTERNET AND WEB TECHNOLOGIES COMP1503NCX 5	
Unit		
3 🔻		
Weightage of Unit		
10		
10		
	evolution, web page, web server, HTTP protocol. Examples of Web Servers. Navigation Tools: e, Internet Explorer, Uniform Resource Locator (URL). Hypertext, Hyperlinks and Hypermedia ch Engines , Proxy Servers	
Difficulty Level		
Difficult		
Moderate		
Easy		
	Fig 8 Procedure of writing the question	•

NOT DYNAMIC

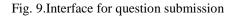
A choice then has to be made whether this question is going to be dynamic or not, if not then upon selection a text-box would appear for the question to be written. Following it would appear another text-box designating the hint related to this question. Lastly an option would appear whether this question has any diagram associated to it, if then procedure of uploading that image would be undertaken. Finally comes the point where the marks need to be set up of the question constructed. The marks are pre-defined, they can be 5, 10 or 20 but however they go sync with the weightage of the unit, for example:

The wightage of the question papers conducted carry total marks of 200, out of which student has to attempt only 100 to pass. Thus if the weightage of a unit is supposed to be 20, then 40 marks from that unit are to be held in the paper, the question thus send from that unit can have marks of 5, 10 and 20, irrespective of the count. However if a unit is of 5 marks then the system would recognize that the questions set from this unit can have weightage of either 5 or 10 only.

An alert, presents with the assumed marks which helps the teachers recognize this problem if their calculation is dithered.

Once the question is submitted, the teachers can view the history from their respective accounts.

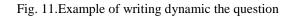
Difficulty Level		
 Difficult 		
 Moderate 		
Easy		
Is dynamic? 💿 Yes 💿 No		
Question		
Hint (optional)		
Has Diagram? 🔵 Yes 💿 No		
Weightage of this question		
5 *		
5		
10		
20		



DYNAMIC

When chosen for the question to be dynamic, the teacher needs to write the question in fragments. Multiple choices are provided for each dialogue box so that the logic behind assembling the correct numeric values is validated. The function then randomly decides which value to be taken from the range and thus forms a question. Same procedure then follows as that of not dynamic question.

<pre>Minute veel i</pre>	Difficult Moderate Easy advantio? • Ves • No toptorol so Diagram? • Ves • No toptorol so Diagram? • Ves • No toptorol so Toptorol so topto		
Moderate Bay Salest Number of Variables Salest Number of Variables as Diagram? Vs No Reginate of this question 5 • • • • • • • • • • • • • • • • • • •	<pre>Noterials is dest winder of Variables Select Number of Variables select Number of Variables </pre>		
<pre>say symmber of Variables select Number Of Variables * int toptional a Diagram? Yes * No teptinge of this question * sound * sound * fig. 10.Defining various segments of question * fig. 10.Defining various segments of question * fig. 10.Defining various segments of question * sound * so</pre>	Eay types of Variables select Number Of Variables a Diagram? Vos No toptomal solution fig. 10.Defining various segments of question fig. 10.Defining various segments of question fig. 10.Defining various segments of question fig. 10.Defining various segments of question types of Variables 2		
<pre>stymms?</pre>	stynamic? Yes Salest Number Of Variables Fig. 10.Defining various segments of question Salest Number Of Variables <		
Iumber of Variables select Number Of Variables as Diagram? Vos No Veightage of this question 5 • • Subtrot Fig. 10.Defining various segments of question Fig. 10.Defining various segments of question	unber of Variables Select Number Of Variables as Diagram? Yes No reghtage of this question 5		
Int (optional) Ins Diagram? Vos No Veightage of this question 5 • • Submit 5 • • Submit Fig. 10.Defining various segments of question fig. 10.Defining various segments of question 0 unber of Variables 2 • • Cuestion part 1 Find the Fixed • No. of values 2 • • Value {summation Cuestion part 2 of Not Fixed • Range Bard(234) \$ stop2121	int (optional) as Diagram? Yos No registrate of this question 5 • • Subtries 6 • • 9 • • • • 9 • • • • 9 • • •		No
It as Diagram? Vol to No Veightage of this question 5 • • • • • • • • • • • • • • • • • • •	as Diagram? Vs No registrage of this question 5 Submit Fig. 10.Defining various segments of question dynamic? Vs No unber of Variables 2 7 Find tho Fixed 7 Value furmation 7 Value furmation 7	Select Number Of Variable	15 🔻
tas Diagram? Vs No Veightage of this question 5 • • • • • • • • • • • • • • • • • • •	as Diagram? Vs No registrage of this question 5 Submit Fig. 10.Defining various segments of question dynamic? Vs No unber of Variables 2 7 Suestion part 1 Find tho Fixed • No. of values 2 Value fsummation Question part 2 of Not Fixed • Range Barg2344 \$sop2121		
Veloa	septence of this question 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	lint (optional)	
Velation of this question	septence of this question 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		
Velytage of this question	septence of this question 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	las Diagram? 💿 Yes 💿 N	No
5 • • • • • • • • • • • • • • • • • • •	5 Submit Fig. 10.Defining various segments of question dynamic? • Yes • No unber of Variables 2 • • Guestion part 1 Find the Fixed • No. of values 2 • • Value 4 summation Variue 2 multiplication Question part 2 of Not Fixed • Range Ra		
Submit Fig. 10.Defining various segments of question umber of Variables 2 • Cuestion part 1 Find the Fixed • No. of values 2 • Value 1 summation Cuestion part 2 of Not Fixed • Range Stor[2344] \$top[2121]	Submit Fig. 10.Defining various segments of question dynamic? • Yes • No umber of Variables 2 • • Question part 1 Fixed • No. of values 2 • • Value 1 jummation Value 2 multiplication Question part 2 of Not Fixed • Range Bard 2344 Btop 2121		
Fig. 10.Defining various segments of question	dynamic? Yes No umber of Variables 2 2 Question part 1 Fixed Fixed Value 1 water 1 of Not Fixed Not Fixed Not Fixed Tables a a a a b a b a b b a b b b b b b b b b b b b c a b b b b b b b b b b c c c a b b b b b b b b b c <	5	•
a dynamic? • Yes • No tumber of Variables 2 • • Calestion part 1 Find the Fixed • • No. of values 2 • • Value 1 summation value 2 multiplication Calestion part 2 of Not Fixed • • Range Start 2344 stop 2121	dynamic? ves ve umber of Variables 2 3 Guestion part 1 Find the Fixed 7 No. of values 2 2 Value 1 summation Question part 2 of Not Fixed * Not Fixed * Start 2344 Stop 2121	Submit	
a dynamic? Yes No 2 • auestion part 1 Find the 7 Value 1 • <td>dynamic? ves ve umber of Variables 2 3 Guestion part 1 Find the Fixed 7 No. of values 2 2 Value 1 summation Question part 2 of Not Fixed * Not Fixed * Start 2344 Stop 2121</td> <td></td> <td>Fig. 10 Defining various segments of question</td>	dynamic? ves ve umber of Variables 2 3 Guestion part 1 Find the Fixed 7 No. of values 2 2 Value 1 summation Question part 2 of Not Fixed * Not Fixed * Start 2344 Stop 2121		Fig. 10 Defining various segments of question
aumber of Variables 2 Cuestion part 1 Find the Fixed Fixed • No. of values 2 • Value 1 summation Value 2 multiplication Getton part 2 of Not Fixed • Range Start 2344 Stop 2121	amber of Variables 2 2 4 5 6 6 7 6 7 7 7 7 7 7 7 7 7		Fig. 10.Defining various segments of question
aumber of Variables 2 Cuestion part 1 Find the Fixed Fixed • No. of values 2 • Value 1 summation Value 2 multiplication Guestion part 2 of Not Fixed • Range Star 2344 Stap 2121	amber of Variables 2 2 4 5 6 6 7 6 7 7 7 7 7 7 7 7 7		
aumber of Variables 2 Cuestion part 1 Find the Fixed Fixed • No. of values 2 • Value 1 summation Value 2 multiplication Getton part 2 of Not Fixed • Range Start 2344 Stop 2121	amber of Variables 2 2 4 5 6 6 7 6 7 7 7 7 7 7 7 7 7		
aumber of Variables 2 Cuestion part 1 Find the Fixed Fixed Value 1 value 1 value 1 of Out Fixed Not Fixed Stare 2344 Stop 2121	amber of Variables 2 2 4 5 6 6 7 6 7 7 7 7 7 7 7 7 7		
2 Cuestion part 1 Find the Fixed No. of values 2 Value 1 summation Value 2 multiplication Ouestion part 2 of Not Fixed Not Fixed Star 2344 Stop 2121 Value 1 Stop 2121 Value 1 Stop 2121 Value 2 multiplication Value 2 multiplication Val	2 Question part 1 Find the Fixed No. of values 2 Value 1 summation Value 2 multiplication Question part 2 of Not Fixed Not Fixed Start 2344 Stop 2121		No
Question part 1 Find the Fixed No. of values 2 2 Value 1 summation Value 1 summation Value 2 multiplication Question part 2 of Not Fixed * Range Star (2344) Stop 2121	Question part 1 Find the Fixed Values 2 Value 1summation Value 2multiplication question part 2 of Not Fixed Not Fixed Stop/2121	umber of Variables	
Find the Fixed No. of values 2 Value 1 value 2 value 2 value 1 value 2 value 1 value 2 value 1 value 2 value 1 value 1 value 2 value 1 value 2 value 1 value 1 <	Find the Fixed No. of values 2 Value 1 value 2 value 2 uestion part 2 of Not Fixed Not Fixed stop 2121	2	*
Find the Fixed No. of values 2 Value 1 value 2 value 2 value 1 value 2 value 1 value 2 value 1 value 2 value 1 value 1 value 2 value 1 value 2 value 1 value 1 <	Find the Fixed No. of values 2 Value 1 value 2 value 2 uestion part 2 of Not Fixed Not Fixed stop 2121	Question part 1	
Fixed No. of values 2 2 Value 1 summation Value 2 multiplication Question part 2 of Not Fixed * Range Star 2344 Stop 2121	Fixed No. of values 2 2 Value 1 summation Value 2 multiplication Question part 2 of Not Fixed Not Fixed stop 2121		
No. of values 2 3 4 2 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	No. of values 2 2 Value 1 summation Value 2 multiplication Question part 2 of Not Fixed Range Start 2344 Stop 2121	Find the	
No. of values 2 3 4 2 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	No. of values 2 2 Value 1 summation Value 2 multiplication Question part 2 of Not Fixed Range Start 2344 Stop 2121		
2 * Value 1 summation Value 2 multiplication Question part 2 of Not Fixed * Range Start 2344 Stop 2121	2 Value 1 summation Value 2 multiplication Question part 2 of Not Fixed Range Start 2344 Stop 2121	Fixed	T
Value 1 summation Value 2 multiplication Question part 2 of Not Fixed Range Start 2344 Stop 2121	Value 1 summation Value 2 multiplication Question part 2 of Not Fixed Range Start 2344 Stop 2121	No. of values	
Value 1 summation Value 2 multiplication Question part 2 of Not Fixed Range Start 2344 Stop 2121	Value 1 summation Value 2 multiplication Question part 2 of Not Fixed Range Start 2344 Stop 2121	2	*
Question part 2 of Not Fixed ▼ Range Start 2344 Stop 2121	Question part 2 of Not Fixed Range Start 2344 Stop 2121		
of Not Fixed Range Start 2344 Stop 2121	of Not Fixed Range Start 2344 Stop 2121		Value 2 multiplication
Not Fixed Range Start 2344 Stop 2121	Not Fixed	Question part 2	
Range Start 2344 Stop 2121	Range Start 2344 Stop 2121		
Range Start 2344 Stop 2121	Range Start 2344 Stop 2121	of	
Star(2344 Stop 2121	Start 2344 Stop 2121	of	
Star(2344 Stop 2121	Start 2344 Stop 2121		×
		Not Fixed	•
Question ending	Question ending	Not Fixed	
Question ending	Question ending	Not Fixed	
		Not Fixed Range Start 2344	
		Not Fixed Range Start 2344	



4. Generation of question paper

A single authority has the function to then generate the question paper and to save them. Questions of a particular subject are selected randomly from the bulk of questions present in the database. A well structured paper presented has all the benchmarks fulfilled that is, the levels of difficulty, choices within the paper, and the total weightage. Thus with a press of single button, a question paper is generated which strikes no resemblance with the submitter of the paper and no account of anyone ever being able to see the contents of it.

JIKSBOTTER J&K State Board of Technical Education			Home	Logout
> Generate Questi	on paper			
> View saved ques	stion papers			
D Copyright Jammu & Kashmir S	tate Board Of Technical Education	MAINTAINED	by ITCELL @ JKSBOTE Terms &	Conditio
I	Fig. 12 Login page of the author	ority for generating pape	er	
ј Зкарање и селоте и с	Fig. 12 Login page of the authors	ority for generating pape	er Home	Logout
- Bo	F <mark>ig. 12 L</mark> ogin page of the autho Jammu & Kashmir state Boar			Logout
JICSBOTTE Jak State Board of Technical Education				Logout
JKSBOTE Jakk State Board of Technical Education			Home	ISTANT
Jak State Board of Technical Education Max Marks: 100 Time alloted: 3 hrs.	Jammu & Kashmir state Boar	d of Technical Education	Home Roll Number: Sub: EARTHQUAKE RESI	ISTANT
Max Marks: 100 Time alloted: 3 hrs. Session: ND17 Instructions for candidates: 1) Attempt 100 marks(Maximum). ii) Use blue pen only.	Jammu & Kashmir state Boar	d of Technical Education Sem: 6	Home Roll Number: Sub: EARTHQUAKE RESI	ISTANT TION
Max Marks: 100 Time alloted: 3 hrs. Session: ND17 Instructions for candidates: () Attempt 100 marks(Maximum). () Use blue pen only.	Jammu & Kashmir state Boar Branch: Civil Engineering	d of Technical Education Sem: 6	Home Roll Number: Sub: EARTHQUAKE RESI BUILDING CONSTRUCT	ISTANT
Max Marks: 100 Time alloted: 3 hrs. Session: ND17 Instructions for candidates: 1) Attempt 100 marks(Maximum). ii) Use blue pen only. QN01 a: WHAT DO YOU UNDERSTAND	Jammu & Kashmir state Boar Branch: Civil Engineering	d of Technical Education Sem: 6	Home Roll Number: Sub: EARTHQUAKE RESI BUILDING CONSTRUCT	ISTANT TION (10)

Fig.13. Automatic question paper generation

IMPLEMENTATION

Question paper management system can be used to reduce the redundancies which occur during setting of the question paper manually. This is a fair and an unbiased system which justifies the way examinations are held today!

ADVANTAGES

- Wide portion coverage and efficient question paper generation.
- No chance of paper leaks.
- The system provides an unbiased result.
- Thus the system excludes human efforts and saves time and resources.

JUCR

REFERENCES

[1] Chandrani Singh, Dr. Arpita Gopal, Santosh Mishra, "Extraction and Analysis of Faculty Performance of Management Discipline from StudentFeedback Using Clustering and Association Rule Mining Techniques", IEEE, 2011.

[2] Fema, Paul and Abdur-Rahman, Veronica (1999) The Development and Utilization of a Computerized Student Database. *ABNF Journal*, Mar/Apr.

[3] Dar, S. A. (n.d.). Result Processing: Issues and Solutions (With Reference To J&K State Board Of Technical Education). *International Journal Of Engineering Sciences & Research Technology*, 7(4), 267-269.

[4] Ghosh Anup K., "E-commerce Security": Weak Links, Best Defenses, Wiley Computer Publishing, 1998.

[5] Media Abdul Razak Ali,M.Sc ,In a computer and software engineering department of the University of AL-mustansiriya, "Design and Implementation of SET Enabled E-commerce System",2005.

[6] NN Murthy, BM Mehtre, KPR Rao, GSR Ramam, PKB Harigopal, and KS Babu, "Technologies For E-Commerce: An Overview", CMC Center-R&D, CMC Limited Old Mumbai Highway, Gachibowli Hyderabad – 500 019, Andhra Pradesh ,2000.

[7] Shakeel Ahmad Dar," Result Performance Analysis and Computation for Polytechnic Sector of J&K", International Journal of Scientific Research in Computer Science, Engineering and Information Technology ,Volume 3,Issue 1(2018)

[8] Singh Abhishek, OM Shankar, Vikash Kumar and Tapanray," Risk in E-Banking", CC BY-NC 3.0,2009, available at http://www.scribd.com/doc/22356535/Risk-in-E-Banking-PDF,visited on July 16,2011.

[9] Sumanjeet Singh," Emergence of Payment Systems In The Age Of Electronic Commerce: The State Of Art ", Global Journal of International Business Research Vol, 2, No, 2, 2009.

[10] Dar, Shakeel Ahmad, "An Implementation of an Online Registration System in J&K State Board of Technical Education for Polytechnics", International Journal of Scientific Research in Computer Science, Engineering and Information Technology(ISSN: 2456-3307), Volume 3, Issue 1, available at http://ijsrcseit.com/PDF.php?pid=CSEIT1831208&v=3&i=1&y=2018&m=January-February