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STATEMENT OF THE PROBLEM

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HYPOTHESES

RESEARCH METHODOLOGY

RESULTS & DISCUSSION

FINDINGS

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APPENDIX/ANNEXURE

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CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

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- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

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METHOD FOR DESIGN PATTERN SELECTION BASED ON DESIGN PRINCIPLES

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ABSTRACT

Day-by-day new design patterns are emerging. Patterns classified/grouped based on several factors. Each group contains more than one pattern. Within the group, patterns have close relationship with one another. Often, user's select design patterns based criteria's like purpose, problem scope, context, intent, and known uses. However, finding the correct design pattern remains complex task. The current paper describes a method for design pattern selection based on design pattern charectestics/principles. It is a kind of similarity search method. The method has two parts. Part-1 captures requirements in the form of a query, evaluates the query, and suggests a pattern. If part-1 fails to give a correct pattern, then part-2 suggests related pattern based on the inputs received from user in the part-1. The current paper mainly focuses on part-II.

KEYWORDS

GoF patterns, pattern classification, Design pattern search.

INTRODUCTION

The foundation for patterns had been laid by Christopher Alexander [7]. His work had inspired GoF (E.Gamma, R.Helm, Ralpha Johnson and J.Vlissides) for developing object oriented software-related patterns. The work in the current paper starts with the Gang-of-Four patterns (GoF). The GoF described 23 design patterns and represented these patterns in UML notations (Unified Modelling Language) in there text book "Elements of Reusable Object Oriented Software" in the year 1995. The GoF book describes design pattern as "Descriptions of communicating objects and classes that are customized to solve a general design problem in a particular context" [7]. In the fall of 1994, the Eric Gamma et al., have developed a pattern catalog containing Creational, Structural and Behavioural patterns. The catalog creation was part of Eric's Ph.D thesis [7,p.no 355]. The team GoF divides patterns into three groups based on the "problem and scope". The GoF patterns lay foundation for the current work in this paper. The GoF defines the patterns as follow

1.1 CREATIONAL PATTERNS

Creational design patterns deals with object creation and class creation mechanisms [7]. The basic form of object creation could result in design problems and increases complexity to the design. Creational design patterns solve the problem by somehow controlling this object creation [7].

1.2 STRUCTURAL PATTERNS

"Structural Design Patterns are Design Patterns that ease the design by identifying a simple way to realize relationships between entities" [7].

1.3 BEHAVIOURAL PATTERNS

"Behavioural design patterns are design patterns that identify common communication patterns between objects and realize these patterns. These patterns increase flexibility in the communication between objects" [7].

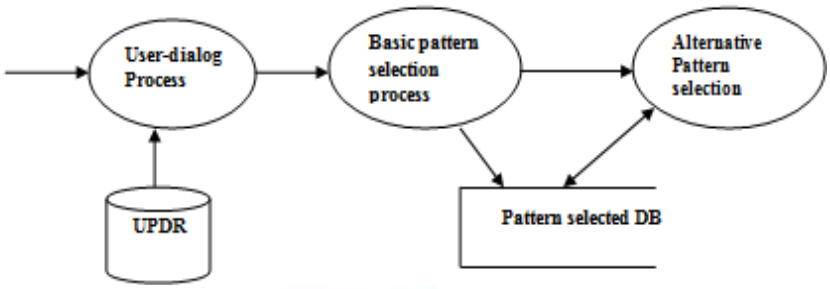
The remaining part of the paper has been organized as follows:

Section 2 describes Alternative pattern selection method, section 3 describes implementation – pseudo code and section 4 describes related work, section 5 describes system execution flow. And section 6 describes conclusions.

2. ALATERNATIVE PATTERN SELECTION METHOD

The basis for the method is from similarity based searches. Several similarity based searches are becoming popular in several applications. For example, clustering techniques use similarity based distance measures. The objective of the method is to identify a suitable alternative pattern based on the user preferences. The fig 2.1 represents a DFD (data flow diagram) of the overall view. The system has user dialogue component (UDC). The UDC poses questions to user and takes answers. Questions are created based on design principles (e.g Does the problem has coupling?). The Answers are stored in internal storage (a text file). Based on the answers, the system finds a pattern matching score and suggest a pattern [3]. If user not satisfied with suggestion, then the system invokes alternative pattern method. The present paper describes detailed description of the method with illustration. It was named as similarity_pattern_search [**4].** The following figure 2.1 represents a data flow diagram of the system under consideration.

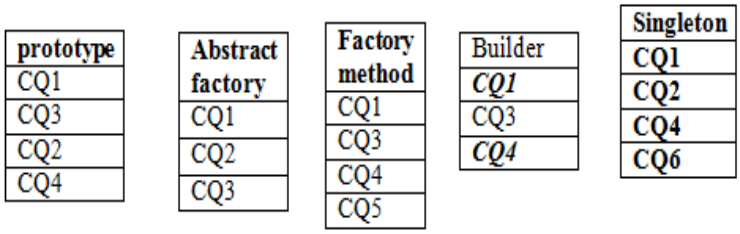
FIGURE: 2.1 PATTERN SELECTION OVERVIEW DFD`



In the above figure 2.1, UPDR represents Unified Pattern Document Repository for design patterns. It contains patterns data and related questions in XML format [16]. GoF contains total 23 patterns divided into 3 categories [7]. The creational pattern category contains 5 patterns, namely abstract factory, Builder, Factory method, Prototype and Singleton. Each category can be considered as a cluster. Because, patterns in the same category possess some common characteristics. For selecting a pattern, user required to answer questions related a pattern. Questions are interrogative and binary. The designer of a system prepares questions and populates them into the pattern repository. The number of questions varies from pattern to pattern.

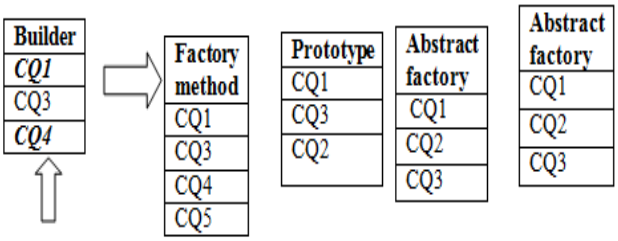
The method performs comparison between questions to find the similarity between patterns. Comparing between large stings or sentences is complex. Even for simple difference string matching fails. To overcome this difficulty, the researcher of the system assigns id's to each question (e.g.id for the question, Does the problem has coupling?: is QC1). For example, QC1 represents a question related to creational pattern. However, assigning ids is a human intensive task. The following figure 2.1 shows the logical view about the creational patterns with related question ids. The creational pattern explains object and class creations.

FIGURE 2.2 LOGICAL VIEW ABOUT THE CREATIONAL PATTERN



Factory method pattern represents classes and their relationships. It explains how to create a class. Whereas the remaining four patterns represents object creations. A class possess static charectertics and an object possesses dynamic characteristics. Prototype, Abstract Factory, Builder, and Singleton solve problems in object creation each differently. All these patterns have relationship with one another. Prototype pattern explains how to create objects using prototypical instance and create new objects by copying the prototype [7]. "Abstract factory explains how an interface creates families of related or dependant objects without specifying concrete classes" [7]. "Factory method lets subclasses to decide which class to instantiate" [7]. Builder pattern explains the construction of complex object from its representation [7]. Singleton pattern explains how a class can have single instance. Each question has been given codes like CQ1, CQ2, CQ3 and CQ4. Similarly the remaining patterns questions are given codes. Some questions are common between patterns. Hence, the same code appears. In the fig.2.1 CQ3 is one of the common question in Prototype pattern, abstract factory pattern, factory method pattern, and builder pattern. At the end of the first interaction (i.e part-I), the system has suggested Builder pattern (represented with an arrow mark pointed to Builder pattern in Figure 2.3)

FIGURE.2.3 BASIC FLOW SELECTION



If user is not satisfied with it Builder pattern, then the system invokes alter native method. The system search for alternative pattern in the remaining four. So, the probability of finding the best alternative pattern is ¼. The fig 2.3 shows alternative pattern group. The Builder pattern contains three questions. i.e CQ1, CQ3, and CQ4. If user has given answers for the questions CQ1 & CQ4 and user has not given the answer for the question CQ3 in part-1. Selected questions are called answered questions and they are kept in an array called "Selected Questions" and unanswered questions are kept in an array called 'NonSelectedQuestions'. Now, the method has acquired knowledge about user requirements. In the beginning the system knows only the query (see fig. 5.1). As the system narrow down the requirements through question and answers, the system keep acquiring the knowledge. Based on the knowledge acquired, the method search for an alternative pattern. In other way, the method search for similarity between the current pattern under consideration with the remaining patterns. The resultant of the similarity is measured on a numeric score. The pattern whichever gets highest score will be suggested as an alternative pattern within the same group. The next section explains the implementation of the method.

3. IMPLEMENATION

This section explains the pseudo code of the implementation and description of the method.

The following variables hold the user selected questions.

Let SelectedQuestions (in Builder pattern) [ ] = {CQ1, CQ4}

Let NonSelectedQuestion (in Builderpattern) [ ] = {CQ3}

Selected Questions indicates the features matching with the features which the user is looking for. Conversely, NonSelectedQuestions indicates the features which the user is not looking for. The alternative pattern selection method considers these issues for selecting a pattern. Both SelectedQuestions and

NonSelectedQuestions are considered in the similarity score calculation. The implementation details for finding the similarity score of the method (pseudo code) are as follows:

Similarity Score Method:

Begin

[1] Score =0; MaximumScore=0;
[2] *For* I=1 to N-1
/* for each pattern in alternative group */
[3] For J=1 to N-Questions
/* Questions in each alternative pattern */
Begin
[4] if Selected Question matches with questions in the AlternativePatternQuestion [i] then Add 1 to Score;
/* **Comments** – for example, CQ1 is matching in the abstract factory pattern. Hence, Score = Score + 1. */
[5] If NonSelectedQuestion matches in the AlternativePatternQuestion [i] then subtract 1 from Score;
End;
[6] Hashmap (AlaternativePattern, score)
[7] If Score > MaximumScore then set MaximumScore=Score;
End;

On successful execution of the method, the following table 1 shows the similarity scores between Builder pattern and the remaining four pattern in that group.

TABLE 1: PATTERN MATCHING SCORES

	Abstract factory	Factory method	Prototype	Singleton
Builder Pattern	0	2	0	2
	Score=0	Score=2	Score=0	Score=2
	Maximum Score=0	Maximum Score=2	Maximum Score=2	Maximum Score=2

In the table 1, the maximum score is 2. In the current situation, two patterns have got the same score. Then the method selects one among the two. In case, user is not satisfied with the Factory method, then singleton would be preferred.

4. RELATED WORK

It is found that various authors have proposed methodologies, and models for design pattern selection. Brief details about each of them are given as follows:

In 1995, the Gamma et.al [7] had described object oriented design patterns. The brief details were explained in the introduction. The GoF authors explained patterns relationships [7, p.no, 12]. They highlighted how do more than one pattern would be applicable for the given situation. For example, Façade pattern solves object communication problem within subsystem. It provides a single simplified interface to communicate with the subsystem. It means only one Façade object is required. Hence, Façade objects follow Singleton pattern. The purpose of the singleton is to provide global point of access [7]. Similarly, abstract factory requires single instance. Hence, it too follows Singleton pattern. These relationships were situation dependant. For one situation more than one pattern may be applicable. The current method in this paper focuses on design characteristics which the user is trying to include solving the problem.

In 2001, Albin-Amiot [1] presented a Box tool for choosing a design pattern. The tool provides access to the design pattern repository. Each pattern is annotated with a shortcut. The method is different from what we have proposed in this paper.

In 2003, David Kung et al [2] proposed a methodology for constructing expert systems which suggests a design patterns to solve problems faced by designers. They presented a prototype – the Expert System for Suggesting Design Pattern (ESSDP) which implements the methodology. The ESSDP selects a design pattern based on the user's requirements. A user interacts with the system in a question-answer manner, which helps to narrow down the selection process. The ESSDP suggest only one pattern at a time. ESSDP was tested with 11 subjects.

In 2006, Khalid et al [15] developed a tool for teaching design patterns to students to recognize appropriate pattern. It mainly simplifies the design pattern learning curve. It provides interactive environment. No evaluation or experiment was reported.

In 2006-2007, Aliaksandr et al [14] published the report, "choosing the right design pattern: An implicit culture approach (SICS)". A multi-agent system was proposed that supports programmers in choosing the design pattern suitable for the given situation. In SICS, personal agents transfer knowledge among users for reusing their experience to know the suitability of the pattern.

In 2007, Sarun Intakosum and Weenawadee Muangoan proposed a model for design pattern retrieval [13]. The proposed model contains two parts. The first part was concerned with development of search index and the second part was concerned with calculation of index weight. The experiment was conducted with GoF patterns in the repository. The system was tested with 105 queries consisting of single-word, two-word, and three-word to compare retrieval performance. The result shows 70 percent in average in retrieving a suitable design pattern. No knowledge based or characteristics based pattern retrieval was observed.

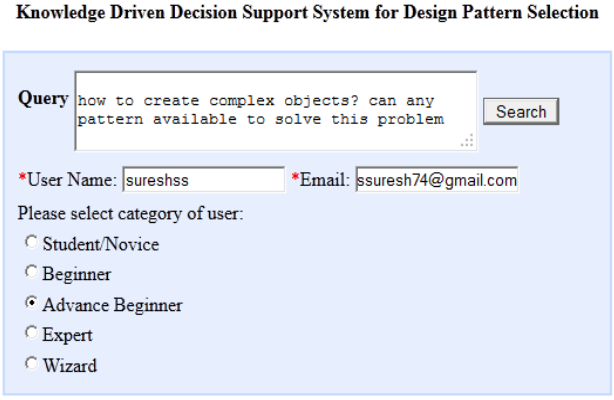
In 2008, Luka Pavlic et al [12], proposed a Ontology based pattern repository (OBDPR) based on semantic web technology and developed a tool to operate on it. The tool was built using Artificial Intelligence techniques to improve the efficiency of design pattern selection. Also explicit and implicit knowledge of users was captured for further development of intelligent services.

In 2009, Weenawadee Muangon and Sarun Intakosum [11] proposed a model for pattern selection using case-based reasoning (CBR) and Formal Concept analysis. A Design pattern was represented in a case-base. FCA was used to analyze the case-base for obtaining knowledge. Several methods were developed for learning indexes. No experiment and results were observed.

5. SYSTEM EXECUTION FLOW

This section shows the system execution flow with an example query. This gives outline of the system under consideration. Figures.5.1 to 5.6 are the resultants of part-1 Whereas Figures. 5.7 to 5.9 are resultants of part-II (i.e alternative method). Figures. 5.1 shows the home page of the system. It contains text area for entering the user query.

FIGURE 5.1: HOME PAGE OF DESIGN PATTERN SUGGESTION SYSTEM



Upon executing the query figure 5.2 shows matching document for the given query. User has to select one of the matching intent, then immediately user will be asked questions related to that particular pattern.

FIGURE 5.2: RELEVANT DOCUMENTS TO THE GIVEN QUERY

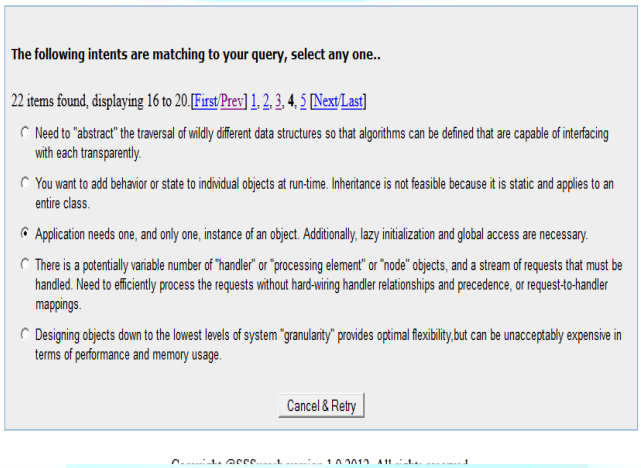
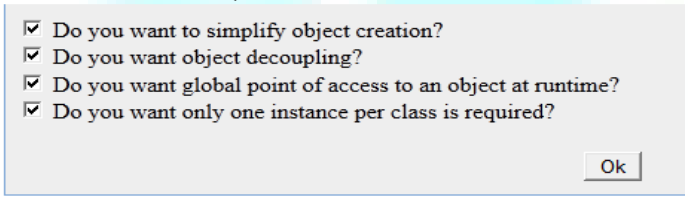


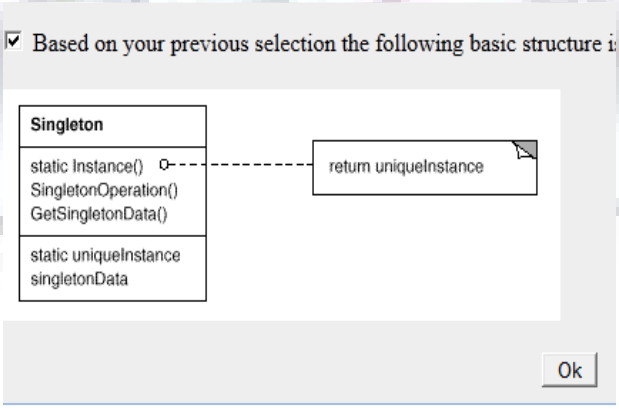
Figure.5.3 shows pattern questions posed by the system. The questions are related to properties of the pattern. User selects the properties and then click on 'OK' button.

FIGURE 5.3: QUESTIONS RELATED TO THE PATTERN



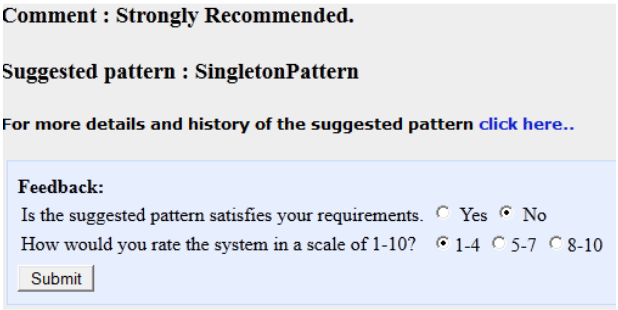
The following Figure 5.4 shows the question related to the pattern structure. User selects the pattern structure if it is matching his requirements.

FIGURE 5.4: PATTERN BASIC STRUCTURE



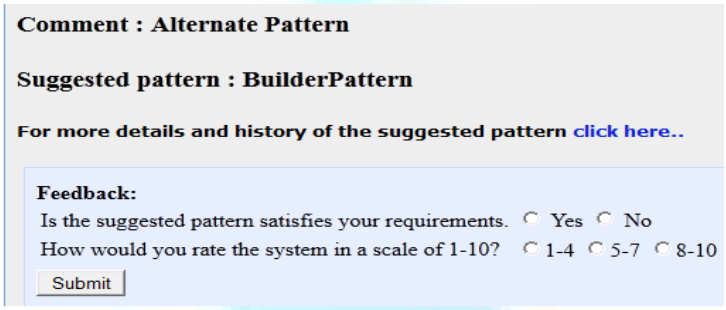
The following Figure. 5.5 shows the final page with comment, pattern suggested and user feedback.

FIGURE 5.5: FEED BACK PAGE



The system has suggested strongly "Singleton pattern" as suitable pattern for the user problem. However, user decision is final. In the feedback, user has given low rating and chosen 'No' option. Upon clicking the submit button, the system search for alternative pattern. The following fig. 5.6 shows the alternative pattern.

FIGURE. 5.6: ALTERNATIVE PATTERN SUGGESTIONS.



The following figure.5.5 suggestion as Singleton. The fig. 5.6 shows the alternative pattern as Builder. Both singleton and Builder patterns solve the complexities in object creation and also falls into the same group.

6. CONCLUSION

A user requires an alternative pattern under the circumstances: when not sure about a query, when the initial query is inappropriate, and when difficult to write a new query. Finding alternative pattern based on user preferred characteristics is important. Suggesting only one pattern at a time and reprocessing the same problem statement (with/without changes) for finding the alternative pattern is a time consuming task. Hence, to overcome the problem, the above said method is implemented. However, the method has a limitation. It can suggest best alternative pattern within the group only. In future we would assess the feasibility of extending the method to find best alternatives among the pattern groups. However, finding alternative pattern among the groups may deviate at large from what user requires. User decision and acceptance is important. However, practically experienced users could identify the related or alternative patterns easily than non-practical experienced users.

7. REFERENCES

1. Albit-Amiot, H.P.Cointe, Y.G. Guehenuue, and N.Jussien, (2001), November. Instantiating and detecting design patterns: Putting bits and piece together. In 6 th annual International Conference on Automated software Engineering (ASE), 166-173.
2. Aleksandra Birukou06, Enrico Benzieri, Paolo Giragini,"Choosing the right Desig Pattern": An Implicit cultural approach, Technical report, 2006-2007.
3. Craig Larman, "Applying UML and Patterns," Prentice Hall, 1998.ISBNN0:
4. David C. Kung, Hitesh Bhambhani, Riken Shah and Gaurav Pancholi, (2005) an Expert System for Suggesting Design Patterns— A Methodology and a Prototype.
5. Fowler, Martin (2002). Patterns of Enterprise Application Architecture. Addison-Wesley. ISBN 978-0321127426.
6. Frank Buschmann, Regine Meunier, Hans Rohnert, Peter Summerland and Michael Stal. "Pattern-Oriented Software Architecture (2007), A System of Patterns, Volume1, Wiley publications.
7. Gamma E., et al. "Design Patterns: Elements of Reusable Object-Oriented Software," (1995), Addison-b Wesley, ISBNNO
8. Khalid S., Y.Al-Tahat, Ayat N.Al-Ahmad, Noor B.Kallojo, Wala.Al-Jayyosusi, AdesigpatterManagement tool for educational purposes. IEEE, 2006.0-7803-953212
9. L. Rising, "The patteErik Hatcher and Otis Gospodnetić, "Lucene in Action", (2004),Manning publications, Second edition, ISBN: 1932394281
10. Luka Pavlic,Marjan Hericko,Vili Podogorele,"Improving Design Pattern Adoption with Ontology-Based Design Pattern Repository", In Proceedings of the ITI 2008 30th Int.Conf.on Information Technology Interfaces, June23-26, 2008, Cavtat,Croatia.
11. S.S.Suresh, Dr.M.M.Naidu," An XML based Knowledge- Driven Decision Support System For Design Pattern Selection, International Journal of Research in Engineering and Technology (IJRET), Vol 1. December, (2011), ISSNNO: 2277-4378
12. S.S.Suresh,Dr.M.M.Naidu,"DesignPattern Recommendation system, (Methodology, Data model, Algorithms)ProceedingsofInternationalConference on Computational Technique and Artificial Intelligence (ICCTAI'2011), (2011) Planetary Scientific Research Center, Oct 7-8Pattaya, Thailand. ISBNNO:
13. Suresh S S1, Dr.Sagar S. Jambhorkar,, "Unified Document Repository (UPDR) for Design patterns Selection", International Journal of Engineering Research and Development, e-ISSN: 2278-067X, p. ISSN : 2278-800X, Volume 5, Issue 8 (January 2013), PP. 01-08
14. Tichy W. F., "A Catalogue of General-Purpose Design Patterns",In Proceedings of Technology of Object- Oriented Languages and Systems (TOOLS 23), IEEE Computer Society, (1998). pp. 330-339
15. Weenawadee Muangon and Sarun Intakosam, Retrieving Model for Design patterns,
16. Weenawadee Muangon and Sarun Intakosam,"Retrieving Design pattern by Case-Based Reasoning and Formal Concept Analysis", (2009), IEEE.978-1424—4520.

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