IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 9, Issue 6, June 2021

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 7.542

International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.542 |

|| Volume 9, Issue 6, June 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0906024 |

Automatic Time Table Generator Using Genetic Algorithm

Insharah Shaikh[1], Juveriya Nadaf[2], Pranit Dhamale[3], Prof. Mrs. Pratima Patil[4]

UG Student, Dept. of Computer, KJEI's Trinity Academy of Engineering, Pune, Maharashtra, India[1,2,3]

Assistant Professor, Dept. of Computer, KJEI's Trinity Academy of Engineering, Pune, Maharashtra, India[4]

ABSTRACT: To Change the traditional system of generating timetable. With the help of Genetic Algorithm will be created Automatic Time Table Generator Using Notification Specification so that teachers will be able to generate timetable easily. It will create timetable for each class and section. The administrator will assign the staff their subject to a particular time slot. With feature of assigning of assignment by and to submit assignment and view the marks by student. Genetic algorithm is a popular meta-heuristic that has been applies to many hard combinatorial optimization problems which includes scheduling lectures/classes.

KEYWORDS: Genetic Algorithm, Timetable.

I. INTRODUCTION

As time table is essential part of education system, the traditional way of generating a time table is to assign a teacher to create a timetable. As new technologieshave become an important part of education system, we have created automatic timetable generator using notification specification which will help teachers to be able to generate time table. It will create time table for each class and section department the process of generating automatic timetable is that administrator will assign the staff,their particular subject at a particular time slot also with feature of assigning of assignment by and to submit assignment and view the marks by student.

II. LITERATURE SURVEY

Akshayputt swamy, H M Arshad Ali Khan, Chandan S.V, Parkavi.A"A STUDY ONTIMETABLE GENERATOR". Department of Computer Science and Engineering, M S Ramaiah Institute of Technology, Bangalore. In the Year 2018. The key points includethe significant aim of this paper is to produce timetable for any number of courses and multiple semesters. This system will help to create dynamic pages so that for implementing such a system we can make use of the different tools that are widely applicable and free to use.

International Journal of Interdisciplinary Innovative Research & Development (IJIIRD) ISSN: 2456-236X Vol. 02 Special Issue 03 | 2017 Y Ravi Raju, Mayank Mangal "Web-Based Application for Automatic Timetable Generation" ARMIET Engineering College, sapgaon, Thane, India. In the Year 2017. The key pointsincludeTimetable generation application will simplify the process of time table generation which may otherwise needed to done using spreadsheet manually possibly leading to constraints problem that are difficult to determine when time table is generated manually. The intention of the system is to generate the time table automatically

International Journal of Advanced Research in Computer and Communication Engineering ISO 3297:2007 Certified Vol. 5, Issue 9, September 2016 Copyright to IJARCCE DOI 10.17148/IJARCCE.2016.59113 505 Solving of Lectures Timetabling Problem and Automatic Timetable Generation using Genetic Algorithm Nashwan Ahmed Al-Majmar, Talal Hamid Al-Shafiq Department of Math's and Computers, Faculty of Science, IBB University, IBB, Yemen1 Department of Computers and Information Techniques, UST, IBB Branch, IBB, Yemen 2. In the Year 2016. The key pointsincludeThis paper has concentrated on solving of lectures timetabling problem using genetic algorithm. The research has tried to show that genetic algorithm is a powerful method for solving timetabling problem especially with some suggested improvements. This model has used real datasets to test the effectiveness and functionality of the method. This software model is very useful, because it can produce varied types of timetables and inside it can be found a good combination between artificial intelligence and software engineering. The future work of this research will be trying to improve genetic approach techniques for solving real-world university teaching timetabling problems.

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.542 |

|| Volume 9, Issue 6, June 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0906024 |

International Journal of Advanced Research in Computer and Communication Engineering Vol. 4, Issue 2, February 2015 Copyright to IJARCCE DOI 10.17148/IJARCCE.2015.4254 245 Automatic Timetable Generation using GeneticAlgorithm Dipesh Mittal, Hiral Doshi, Mohammed Sunasra, Renuka Nagpure Bachelors of Engineering, Dept., of Information Tech, Atharva college of Engineering, University of Mumbai, India Assistant Professor, Dept., of Information Technology, Atharva college of Engineering, University of Mumbai, India4 In the Year 2015. The key points include the intention of the algorithm to generate a time-table schedule automatically is satisfied. The algorithm incorporates a number of techniques, aimed to improve the efficiency of the search operation. By automating this process with the help of computer assistance timetable generator can save a lot of precious time of administrators who are involved in creating and managing various timetables of the institutes.

III. PROBLEM STATEMENT

To generate automatic timetable generator.Every institution has its own method of generating timetable and usually the generation of timetable is manually. But as the smart classroom concept is accepted on a large scale the Timetable is an important aspect of the classroom. With feature of Assigning of Assignment by and to submit assignment and view the marks by student.

IV. METHODOLOGY

.In order to deal with timetabling issues, we have proposeda system which would generate timetablesfor the college. Lectures ,Courses, Faculties and Rooms will be scheduled inaccordance with all possible constraints and given inputsand thus a timetable will be generated.And we have added a new specification of Submition of assignment in which students will accept the accept assigned by the teachers and will submit its assignments in a folder named Student.

A. Chromosome Representation

Genes make up the chromosome, and each gene represents a distinct class (i.e. a lecture , a lab session, Teacher, Room and etc). Each classes only requires two laboratory sessions, several 2-hour sessions are required in a week.Labs are scheduled for two hour .Every constraint is represented by the gene value. A lab session requires two genes to represent it. In order to represent a lecture, only one gene is required as well as teacher or rooms.
By using f(x) = x^2 we can assign bits to the inputs andcan give them a unique value which will be value of genes. And by combining all the values of genes the value of chromosome is 01110111110111100 is created.

Subjects	Faculty	Class Room	Days	Slots	Labs
GENE 1	GENE2	GENE3	GENE4	GENE5	GENE6
011	101	11	110	111	100

Figure 1: Formation of Geneotype

CHROMOSOME
01110111110111100

Figure 2:Chromosome Representation

International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.542 |

|| Volume 9, Issue 6, June 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0906024 |

V. GENETIC ALGORITHM

This algorithm reflects the process of natural selection where the fittest individuals are selected for reproduction in order to produce better and healthy offspring of the next generation.

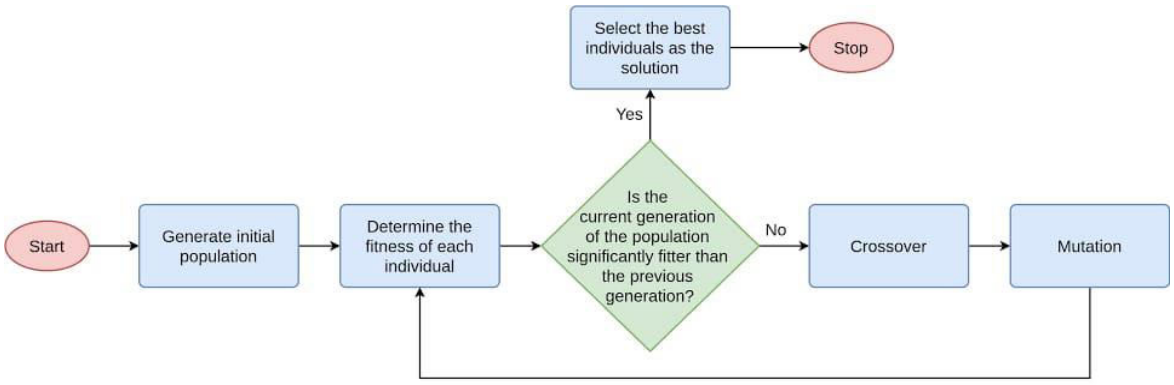

Figure 3: Genetic Algorithm Behavior

Five phases are considered in a genetic algorithm.

1. Initial population
2. Fitness function
3. Selection
4. Crossover
5. Mutation

VI. ALGORITHM

Initialize population
Calculate fitness of all solutions
Sort population by fitness
While termination condition not reached do
  Select two parents from population by tournament selection with size 2
  Create child solution using crossover with a probability P_c
  Apply mutation with a probability P_m to child solution
  Apply Local Search to child solution
  Replace child solution with the worst member of the population
  Sort population by fitness
End while
The best solution achieved as output

Figure 4: pseudo code of Algorithm

The Algorithm used in this Automatic Time Table Generator Using Notification Specification is Genetic Algorithm. This algorithm is based on Charles Darwin Theory"***Survival of the fittest".*** In this algorithm the population is initialized and then the fitness of individuals is calculated then the fittest individuals are sorted out of the population while the weak or not selected individuals will be terminated/killed and then from the selected individuals two individuals/parents will selected to create a child (solution).If the child is fit then the best solution is achieved and if not then again from the selected individuals two individuals/parents will selected to create a child (solution) using Crossover and mutation then the best solution is achieved as output .

International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.542 |

|| Volume 9, Issue 6, June 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0906024 |

VII.SYSTEM ARCHITECTURE

A. Student-Side System Architecture

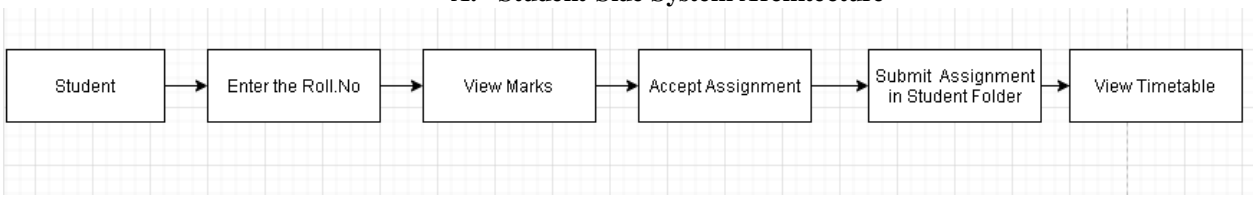

Figure 6:Student-Side Architecture

In Student-side Architecture , the student will login and will enter his roll.no and then will veiw his marks which will be assigned by teacher to him/her. And then accept futher assignement assigned by the teacher and then submit assignment in student folder and can view the timetable in output folder .

B. Teacher-Side system Architecture

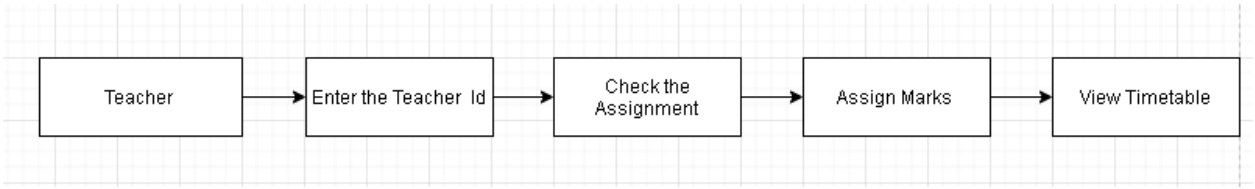

Figure 7:Teacher-Side system Architecture

In Teacher-side Architecture, the teacher will login and will enter his teacher_id and then will check the assignmentwill assign marks to students and can view the timetable in the output folder .

C. Admin- Side System Architecture

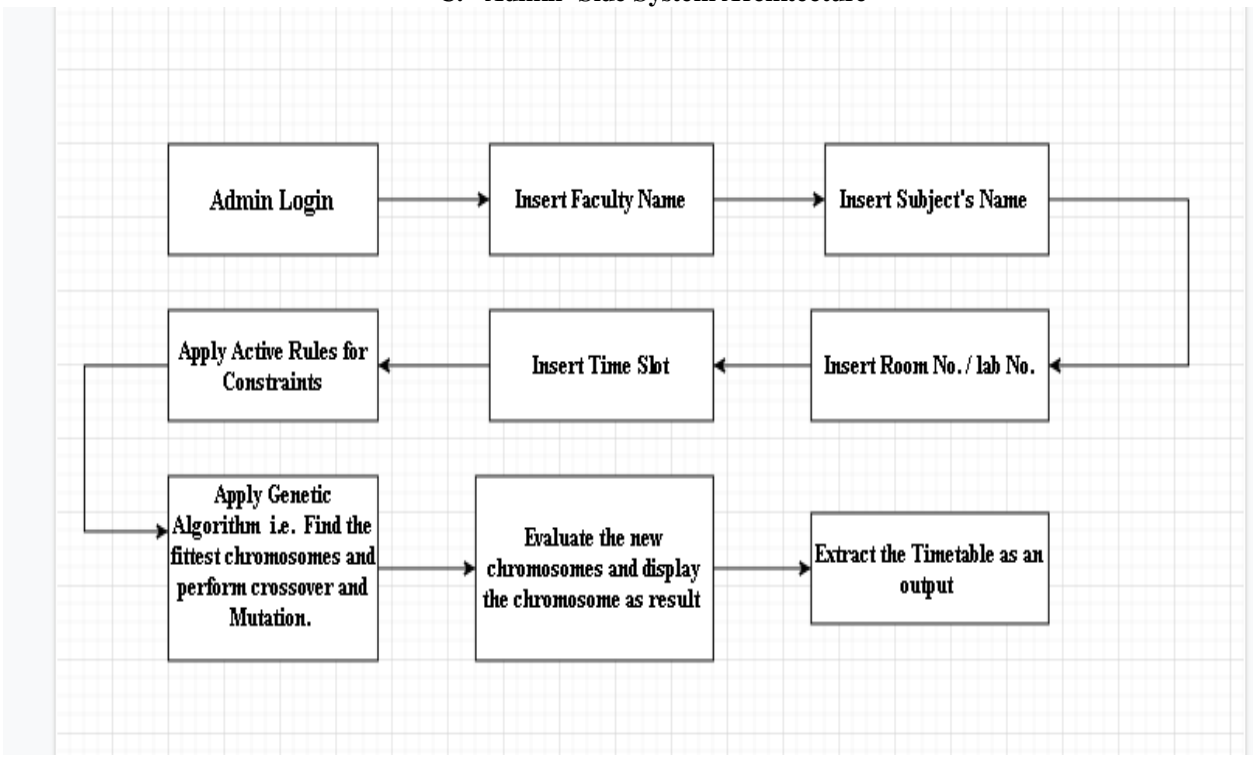

Figure 8: Admin- Side System Architecture

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.542 |

|| Volume 9, Issue 6, June 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0906024 |

In the Admin-Side System Architecture of Automatic Time Table Generator Using Notification Specification, the Admin will login with the help of user_idand password and then the admin will allocate the faculty's name, subject and room and the admin will fill the time slot field and then apply active rules such as 45 minutes break should be occurred after first two lectures and then 15 minutes after the first four lectures. Then the system will apply the Genetic Algorithm and the algorithm will give the best solution as output. Then admin can print the output i.e., Timetable.

VIII. CONCLUSION

An evolutionary algorithm, genetics algorithm for time tabling has been proposed. The intention of the algorithm to generate a time-table schedule automatically is satisfied. The algorithm incorporates a number of techniques, aimed to improve the efficiency. By automating this process with the help of computer assistance timetable generator can save a lot of precious time of administrators who are involved in creating and managing various timetables of the institutes. With therescheduling the absent teachers and notifying teachers and HOD and principal.

Also, the timetables generated are much more accurate, precise than the ones created manually. We have used python to develop our application. The project reduces time consumption and the pain in framing the timetable manually. The benefits of this approach are simplified design and reduced development time.

REFERENCES

1. Akshay puttaswamy, H M Arshad Ali Khan, Chandan S.V, Parkavi.A "A STUDY ON TIMETABLE GENERATOR" Department of Computer Science and Engineering, M S Ramaiah Institute of Technology, Bangalore
2. Y Ravi Raju, Mayank Mangal "Web-Based Application for Automatic Timetable Generation ".International Journal of Interdisciplinary Innovative Research & Development (IJIIRD) ISSN: 2456-236X Vol. 02 Special Issue 03 | 2017
3. Nashwan Ahmed Al-Majmar, Talal Hamid Al-Shfaq"Solving of Lectures Timetabling Problem and Automatic Timetable Generation using Genetic Algorithm" International Journal of Advanced Research in Computer and Communication Engineering ISO 3297:2007 Certified Vol. 5, Issue 9, September 2016 Copyright to IJARCCE DOI 10.17148/IJARCCE.2016.59113 505
4. Dipesh Mittal, Hiral Doshi, Mohammed Sunasra, Renuka Nagpure"Automatic Timetable Generation using Genetic algorithm'International Journal of Advanced Research in Computer and Communication Engineering Vol. 4, Issue 2, February 2015 Copyright to IJARCCE DOI 10.17148/IJARCCE.2015.4254 245
5. Automatic Timetable Generation using Genetic Algorithm International Journal of Advanced Research in Computer and Communication Engineering Vol. 4, Issue 2, February 2015 Copyright to IJARCCE DOI 10.17148/IJARCCE.2015.4254 245

INNO SPACE
SJIF Scientific Journal Impact Factor
Impact Factor: 7.542

doi cross ref

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

निस्केयर NISCAIR

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

9940 572 462 6381 907 438 ijircce@gmail.com

www.ijircce.com

Scan to save the contact details