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Project Scheduling with Time Windows and Scarce Resources

Temporal and Resource-Constrained
Project Scheduling
with Regular and Nonregular
Objective Functions



Project Scheduling With Time Windows

Ralph L. Keeney



Project Scheduling With Time Windows:

Project Scheduling with Time Windows Ulrich Dorndorf, 2012-12-06 Project Scheduling is concerned with the allocation of scarce resources over time The rich optimisation models with time windows that are treated in this book cover a multitude of practical decision problems arising in diverse application areas such as construction engineering or make to order production planning The book shows how Constraint Propagation techniques from Artificial Intelligence can be successfully combined with Operations Research methods for developing powerful exact and heuristic solution algorithms for a very general class of scheduling problems Example applications demonstrate the effectiveness of the approach Project Scheduling with Time Windows and Scarce Resources Klaus Neumann, Christoph Schwindt, Jürgen Zimmermann, 2012-12-06 A survey of the state of the art of deterministic resource constrained project scheduling with time windows General temporal constraints and several different types of limited resources are considered A large variety of time based financial and resource based objectives important in practice are studied A thorough structural analysis of the feasible region of project scheduling problems and a classification and detailed investigation of objective functions are performed which can be exploited for developing efficient exact and heuristic solution methods New interesting applications of project scheduling to production and operations management as well as investment projects are discussed in the second edition

Resource-constrained Project Scheduling with Time Windows Klaus Neumann, Christoph Schwindt, Jürgen Zimmermann, 2005 Project scheduling with time windows and scarce resources Klaus Neumann, 2000 **Project Scheduling with Time Windows and Scarce Resources** Klaus Neumann, 2000 Resource Constrained Project Scheduling with Time Windows Birger Franck, Klaus Neumann, 1997 *Resource-constrained Project Scheduling Problem with Time Windows* Birger Franck, Klaus Neumann, 1997 **Recent Results on Resource-constrained Project Scheduling with Time Windows** Klaus Neumann, Christoph Schwindt, Jürgen Zimmermann, 2002 *Exact Solution Methods of Project Scheduling Problems* Carsten Heuring, 2007 Seminar paper from the year 2002 in the subject Business economics Operations Research grade 1 9 http://www.uni-jena.de/Lehrstuhl_f_r_ABWL_insb_Betriebswirtschaftliche_Entscheidungsanalyse_course/Quantitative_Methoden_der_Projektplanung 12 entries in the bibliography language English abstract The use of project management is continuously growing in industrial and public organizations providing an efficient instrument for mastering the challenges caused by steadily shortening product life cycles decreasing profit margins and global markets One of the main tasks in project management is the scheduling of the project that is the temporal arrangement of activities Resources are required to perform activities and are available with limited capacities Therefore within the project management the activities are to be scheduled subject to precedence and resource constraints In practice different types of resources may occur Renewable resources e g machines are available at each point in time Nonrenewable resources e g money are depleted by use These resources only affect the scheduling of activities if activities can be carried

out in alternative modes which differ for example in duration and amount of resources needed To describe these scheduling problems we use mathematical models The techniques to solve resource constrained project scheduling problems are described with branch and bound methods

Construction Project Planning and Scheduling Charles Patrick,2004 Intended for students and professionals in civil technology engineering and construction management Construction Project Planning and Scheduling presents complete coverage of the principles techniques and applications of all aspects of the scheduling process Some of the key features include Background discussion of the unique nature of scheduling construction projects and the need for sound proven techniques Coverage of the development and use of Work Breakdown Structure WBS as well as the transition from WBS to the elements of the project schedule Use of real world examples and applications to reinforce each scheduling principle Informative illustrations and diagrams to support the text Discussion of the development of Activity On the Node RON diagramming and scheduling techniques with multiple activity relationships

Advances in Project Scheduling Roman Słowiński,Jan Węglarz,1989 This multi author volume containing contributions from international experts in the field presents recent developments in project scheduling for both theory and practice It is organized in three parts I Basic deterministic models II Special deterministic models III Stochastic models A variety of approaches is presented dealing with multiple category resource constraints different mathematical models of activities and various project performance measures in single and multiobjective formulation Exact and heuristic algorithms are presented for both deterministic and stochastic project description The volume will be of special interest to scientists students decision makers executive managers consultants and practitioners involved in systems management or operations research in particular in business engineering and finance but also in other areas of pure and applied sciences

A Constraint-based Method for Project Scheduling with Time Windows Amedeo Cesta,Angelo Oddi,Stephen F. Smith,2000 Abstract This paper presents a heuristic algorithm for solving RCPSP max the resource constrained project scheduling problem with generalized precedence relations The algorithm relies at its core on a constraint satisfaction problem solving CSP search procedure which generates a consistent set of activity start times by incrementally removing resource conflicts from an otherwise temporally feasible solution Key to the effectiveness of the CSP search procedure is its heuristic strategy for conflict selection A conflict sampling method biased toward selection of minimal conflict sets that involve activities with higher capacity requests is introduced and coupled with a non deterministic choice heuristic to guide the base conflict resolution process This CSP search is then embedded within a larger iterative sampling search framework to broaden search space coverage and promote solution optimization The efficacy of the overall heuristic algorithm is demonstrated empirically on a large set of previously studied RCPSP max benchmark problems

Principles and Practice of Constraint Programming ,2004 Scheduling Theory and Its Applications Philippe Chrétienne,1995-09-11 Covering deterministic scheduling stochastic scheduling and the probabilistic analysis of algorithms this unusually broad view of the subject brings together tutorials surveys and articles

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