

ACM ICPC

Mario Ynocente Castro

20 de abril de 2011

Índice

- 1 Spotlight Sessions
- 2 ¿Dónde practicar?
- 3 Competencias
- 4 Temario
 - Básico
 - Intermedio
- 5 Complementos

Spotlight Sessions



www.topcoder.com/tc?module=Static&d1=hs&d2=spotlightSessions

Spotlight Sessions

- Hoy en día es más fácil encontrar problemas
- Aprendió algoritmos en algunos cursos pero mayormente practicando
- Tu universidad no importa, vivimos en una sociedad globalizada
- Los fundamentos matemáticos ayudan
- No es bueno separar aprender algoritmos de codificarlo

Spotlight Sessions

- 90 % práctica
- Necesitas practicar todos los tipos de problemas, especialmente con los que tienes problemas
- Una vez que haz practicado bastante el 99 % de las veces estás haciendo encajar cosas que ya haz hecho
- Problemas fáciles para habilidades de implementación
- Problemas difíciles para pensar

Spotlight Sessions

- Nada se compara a resolver problemas en un ambiente de competencia
- 1 o 2 (SnapDragon), 3 o 4 (ACRush) contests completos por semana con su equipo

Spotlight Sessions

- Un equipo ACM puede funcionar en base a especialidades
- Si había conflicto por el teclado uno escribía pseudocódigo
- Estimar bien el tiempo para una solución
- Para el trabajo en equipo generalmente quieres paralelizar más que trabajar juntos

Topcoder (www.topcoder.com/tc)

Member Count: 291,170 - April 16, 2011 [Set Time]

[TOPCODER]

Hello, MarioYC | Logout

My TopCoder

Home O(n) Tools Tasks

Competitions
TopCoder Networks
Events
Statistics
Tutorials
Forums
Surveys
My TopCoder
Help Center
About TopCoder

UML TOOL

Member Search:
Handle: Go
Advanced Search

Coder of the Month
- March 2011

Algorithm
kyo_key

Design
BLE
4 wins

Development
marioyc
5 wins

facebook

SPONSOR OF THE
2011 TOPCODER OPEN

TopCoder News

Come Join Our \$8,000 Assemblies Challenge!

We are looking for your help with two POC's. \$8000 in Potential Prizes and 2,115 DR points available. C++ is very helpful and there will be more assemblies to follow.

Learn more and register [here](#) and [here](#).

Posted on April 14th, 2011 by [jmpld40](#) [Permalink](#)

Vote Now! New Community Home Page Design!

We are redesigning /TC and want your vote on how it should look! Take some time to look over the designs and [vote](#)!

Discuss the project [here](#).

Posted on April 14th, 2011 by [jmpld40](#) [Permalink](#) [Details](#)

Announcing Facebook as a 2011 TopCoder Open Sponsor!

Facebook is proud to be an official sponsor of the 2011 TopCoder Open. Facebook is a leading provider of social networking services and is a global leader in the technology industry. Facebook is committed to supporting the TopCoder Open and its participants.

Active Contests

Digital Run (21)	13,646 pts
Comp Design (2)	\$1,368
Comp Development (2)	\$1,800
Assembly (9)	\$24,300
Bug Races (12)	\$1,955
Architecture (3)	\$9,450
Conceptualization (4)	\$7,800
Specification (1)	\$2,250
UI Prototype (2)	\$4,050
RVA Bait (1)	\$1,800
Studio (5)	\$9,400
Capital Posting (1)	
Marathon Matches (2)	
Next SRM	Apr 26, 11:00 EDT

Coder: MarioYC
Total Earnings: \$15.00

Minimum Photo Requirements

200 pixels or 3 inches wide
Head and shoulders
[Send Photo](#)

Algorithm
Rating 1569
My Last Match

Design
Rating Not Rated

Development
Rating Not Rated

Marathon Match
Rating Not Rated

Codechef (codechef.com/)

The screenshot shows the CodeChef website interface. At the top, there's a navigation bar with links for Login, Signup, and Connect. Below this is the CodeChef logo and the tagline "A Directi Educational Initiative". The main banner features a colorful illustration of a garden with a large text overlay: "Welcome to the APRIL CodeChef Cook-Off". It specifies "A 2.5 hour contest Open to everyone" and the dates "24TH APRIL, 2011 | 9:30PM - 12:00AM IST". The problem setter and tester are listed as "David Stolz & Zac Friggstad".

Below the banner, there are two main sections: "RECENT BLOG POSTS:" and "RECENT ACTIVITY:".

RECENT BLOG POSTS:

- 14 Apr** **April 2011 Challenge Winners!**
Hi CodeChellers, The April Challenge 2011 is over! The contest went through a few hiccups this month, we faced downtime ...
- 13 Apr** **Bugs are pesky creatures..aren't they?**
Are you tired of CodeChef's bugs interrupting you and not knowing what to do about it? We are constantly looking 1...
- 05 Apr** **CodeChef Judge Down**
Dear CodeChellers, Due to reasons beyond our control, our judge has suffered a network breakdown, so the judge won't ...
- 04 Apr** **Programmer of the Month for April 2011: Md. Mahbul Hasan**
Welcome to the April Programmer of the Month

RECENT ACTIVITY:

Date/Time	User	Problem	Lang	Result
28 min ago	KK123	A String Gam...	C++ 4.3.2	✖
34 min ago	prashant...	Prime Genera...	JAVA	🏆
52 min ago	harish_8...	The Next Pal...	C	🔴
57 min ago	akshay_m...	Number Game ...	C++ 4.0.0-8	✅
57 min ago	eaglex	Adding Least...	C++ 4.3.2	🏆
1 hours ago	KK123	Primality Te...	C++ 4.3.2	✅

Upcoming Contest

April Cook-off
7 days: 17 hrs: 53 min: 44 sec

Directi's Go for Gold
Help India Win the ACM ICPC World Finals

Useful Links

- Short Contest Rating
- Long Contest Rating
- Event Calendar

Codeforces (codechef.com/)

The screenshot shows the CodeChef website interface. At the top, there's a navigation bar with links for Login, Signup, and Connect. Below this is the CodeChef logo and the tagline "A Directi Educational Initiative". The main banner features a colorful illustration of a chef's hat and the text "Welcome to the APRIL CodeChef Cook-Off". It specifies a "2.5 hour contest" that is "Open to everyone" and scheduled for "24TH APRIL, 2011 | 9:30PM - 12:00AM IST". The problem setter and tester are listed as "David Stolz & Zac Friggstad".

Below the banner, there are two main sections: "RECENT BLOG POSTS:" and "RECENT ACTIVITY:".

RECENT BLOG POSTS:

- 14 Apr** **April 2011 Challenge Winners!**
Hi CodeChellers, The April Challenge 2011 is over! The contest went through a few hiccups this month, we faced downtime ...
- 13 Apr** **Bugs are pesky creatures..aren't they?**
Are you tired of CodeChef's bugs interrupting you and not knowing what to do about it? We are constantly looking 1...
- 05 Apr** **CodeChef Judge Down**
Dear CodeChellers, Due to reasons beyond our control, our judge has suffered a network breakdown, so the judge won't ...
- 04 Apr** **Programmer of the Month for April 2011: Md. Mahbul Hasan**
Welcome to the April Programmer of the Month

RECENT ACTIVITY:

Date/Time	User	Problem	Lang	Result
28 min ago	KK123	A String Gam...	C++ 4.3.2	✖
34 min ago	prashant...	Prime Genera...	JAVA	🏆
52 min ago	harish_8...	The Next Pal...	C	🔴
57 min ago	akshay_m...	Number Game ...	C++ 4.0.0-8	✔
57 min ago	eaglex	Adding Least...	C++ 4.3.2	🏆
1 hours ago	KK123	Primality Te...	C++ 4.3.2	✔

Upcoming Contest
April Cook-off
7 days: 17 hrs: 53 min: 44 sec

Directi's Go for Gold
Help India Win the ACM ICPC World Finals

Useful Links

- Short Contest Rating
- Long Contest Rating
- Event Calendar

Project Euler (projecteuler.net/)



16 Apr 2011 10:53 pm
Logged in as MarioYC
76 users online

[About](#) [Problems](#) [Scores](#) [Profile](#) [News](#)
[Statistics](#) [Forum](#) [Contact](#) [Logout](#)

[RSS](#)

✔ Login successful.

About Project Euler

What is Project Euler?

Project Euler is a series of challenging mathematical/computer programming problems that will require more than just mathematical insights to solve. Although mathematics will help you arrive at elegant and efficient methods, the use of a computer and programming skills will be required to solve most problems.

The motivation for starting Project Euler, and its continuation, is to provide a platform for the inquiring mind to delve into unfamiliar areas and learn new concepts in a fun and recreational context.



Who are the problems aimed at?

The intended audience include students for whom the basic curriculum is not feeding their hunger to learn, adults whose background was not primarily mathematics but had an interest in things mathematical, and professionals who want to keep their problem solving and mathematics on the edge.

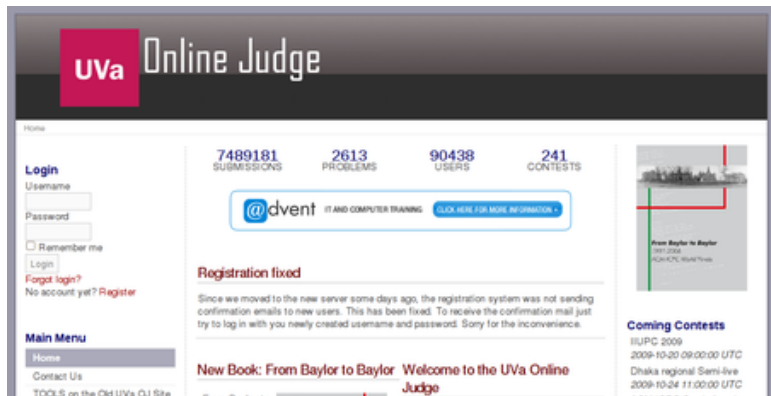
Can anyone solve the problems?

The problems range in difficulty and for many the experience is inductive chain learning. That is, by solving one problem it will expose you to a new concept that allows you to undertake a previously inaccessible problem. So the determined participant will slowly but surely work his/her way through every problem.

How do I know where should I start?

That depends on your background. In the Problems table you will be able to see how many people have solved

UVa OJ (uva.onlinejudge.org/)



The screenshot shows the homepage of the UVA Online Judge. At the top, there is a header with the "UVa Online Judge" logo. Below the header, the page is divided into several sections. On the left, there is a "Login" section with fields for "Username" and "Password", a "Remember me" checkbox, and a "Login" button. Below the login section is a "Main Menu" with links to "Home", "Contact Us", and "TOOLS on the Old UVA OJ Site". In the center, there are statistics: "7489181 SUBMISSIONS", "2613 PROBLEMS", "90438 USERS", and "241 CONTESTS". Below these statistics is a banner for "@dvent IT AND COMPUTER TRAINING" with a link to "CLICK HERE FOR MORE INFORMATION". To the right of the banner, there is a section titled "Registration fixed" with a message about the registration system. Below this is a section titled "New Book: From Baylor to Baylor" and "Welcome to the UVA Online Judge". On the far right, there is a section titled "Coming Contests" with a list of upcoming contests: "IUPC 2009" (2009-10-20 09:00:00 UTC), "Dhaka regional Semi-live" (2009-10-24 11:00:00 UTC), and "ACM-ICPC World Finals".

UVa Online Judge

Home

Login

Username
Password

☐ Remember me

Login

Forgot login?

No account yet? [Register](#)

Main Menu

Home

Contact Us

TOOLS on the Old UVA OJ Site

7489181
SUBMISSIONS

2613
PROBLEMS

90438
USERS

241
CONTESTS

@dvent IT AND COMPUTER TRAINING [CLICK HERE FOR MORE INFORMATION](#)

Registration fixed

Since we moved to the new server some days ago, the registration system was not sending confirmation emails to new users. This has been fixed. To receive the confirmation mail just try to log in with you newly created username and password. Sorry for the inconvenience.

New Book: From Baylor to Baylor

Welcome to the UVA Online Judge

Coming Contests

IUPC 2009
2009-10-20 09:00:00 UTC

Dhaka regional Semi-live
2009-10-24 11:00:00 UTC

SPOJ (www.spoj.pl/)

Log Out
marioyc

my account
tutorials

status
submit
problems
classical
challenge
tutorial
search

news
contests
rank

forum
comments
tools
credits

Server time:
2011-04-17
00:07:08

Sphere online judge

Computer geeks! Eager to assess your skills and get a job?

All problems TODO problems Unsolved problems

AIIADA DOC ASM BASH BF C C# C++ 4.0.0-8 C++ 4.3.2 C99 strict CLPS CLOJ LISP clisp LISP sbd D ERL F# FORT GO HASK ICON ICK JAR JAVA JS LUA NEM NICE CAML PAS gpc PAS fpc PDF PERL PERL 6 PHP PIKE PS PRLG PYTH 2.5 PYTH 3.1.2 RUBY SCALA SCM qobi SCM guile ST TCL TEXT WSPC


list of classical problems

Previous 1 2 3 4 5 6 7 8 9 10 11 Next >

ID	S	NAME	CODE	USERS	ACC %
1	✓	Life, the Universe, and Everything	TEST	2567	38.67
2	✓	Prime Generator	PRIME1	5627	14.45
3		Substring Check (Bug Funny)	SBSTR1	239	12.31
4		Transform the Expression	ONP	5308	51.54
5		The Next Palindrome	PALIN	3389	16.83
6		Simple Arithmetics	ARITH	823	15.02
7		The Bulk!	BULK	180	30.19
8	✓	Complete the Sequence!	CMPLS	813	35.76
9		Direct Visibility	DIRVS	130	19.75
10		Complicated Expressions	CMEXPR	357	29.69
11	✓	Factorial	FCTRL	7335	46.98
12		The Game of Master-Mind	MMIND	122	50.31
13		Hotline	HOTLINE	108	39.66
14		I-Keyboard	IKEYB	383	38.96
15		The Shortest Path	SHPATH	797	16.44
16		Sphere in a tetrahedron	TETRA	508	48.64
17		The Bytelandian Cryptographer (Act I)	CRYPTO1	339	32.05
18		The Bytelandian Cryptographer (Act II)	CRYPTO2	411	38.14
19		The Bytelandian Cryptographer (Act III)	CRYPTO3	77	39.73
20		The Bytelandian Cryptographer (Act IV)	CRYPTO4	24	8.86
22		Triangle From Centroid	TRICENTR	484	38.30
23		Pyramids	PIR	1164	37.33
24		Small factorials	FCTRL2	6329	36.47
25		Pouring water	POUR1	750	17.88
26		Build the Fence	BSHEEP	503	27.83
27		Sorting Bank Accounts	SBANK	1374	27.96

<https://www.spoj.pl/ranks/TEST>

Timus OJ (acm.timus.ru)

ENG <small>RUS</small>		Timus Online Judge	
	Online Judge	Problems	Authors
	About Online Judge	Problem set	Register
	Frequently asked questions	Submit solution	Update your info
	Site news	Judge status	Authors ranklist
	Webboard		<input type="text"/> <input type="button" value="Search"/>
Links			Online contests
			Current contest Scheduled contests Archive

Welcome to the Timus Online Judge, Problem Archive with Online Judge System

The **Timus Online Judge** is the largest Russian archive of problems from different programming contests. You may test your skills trying to solve these problems or taking part in online programming contests, which are regular here. The **Timus Online Judge** is the online judging system that works 24/7. The system will check your solution in a moment and you'll get the judgement result. The server was created and managed by Ural State University students.

First of all, read [Frequently Asked Questions](#) carefully.

Then, choose [a problem](#), solve it and submit it. To submit your solution, please, use [this page](#).

If you want to publish your problems or hold your own online programming contest, just [contact us](#).

SGU (acm.sgu.ru)

Saratov State University :: Online Contester

::Go

- home
- news
- register
- update personal info
- problemset archive
- submit
- status online
- standing
- contests
- virtual contests
- forum
- statistic
- FAQ
- links
- projects

::problemset archive

Volumes

Volume	
Volume (100 - 199)	[1]
Volume (200 - 299)	[2]
Volume (300 - 399)	[3]
Volume (400 - 499)	[4]
Volume (500 - 529)	[5]

::Login

your id:
619327

password:

[Forgot password?](#)

::Poll

What type of programming contest do you like more?

☒ Doesn't matter. Any
☐ Personal (Individual)
☐ Team

[\[results\]](#)

::News

03.04.11 - Attention!
Infrastructure of the site is moving to another server. All submissions made from 22:00 on April 3 to the end of works will be lost. Tentative completion date of moving process - April 5.

23.10.10 - The problemset for "Southern Subregional Programming Contest 2010" is available as PDF.

01.02.10 - We would like to introduce a programming competition portal [Codeforces](#) (and [russian version](#)).

::Counter

Sp 10G 6384 241

Server time: 2011-04-17 02:00:45

Online Contester Team © 2002 - 2010. All rights reserved.

Zhejiang OJ (acm.zju.edu.cn/onlinejudge/)

**Zhejiang University**
Online Judge

Welcome to ZOJ

Login | Register

[Home](#) | [Contests](#) | [Problems](#) | [Forum](#)

Home

FAQ


acm International Collegiate Programming Contest

ZOJ News
2011.4.6
new! [The 8th Zhejiang Provincial Collegiate Programming Contest](#) on April 16.
Enjoy it.
2011.3.11
[The 11th Zhejiang University Programming Contest](#) on April 03.
Enjoy it.
2011.1.23
[ZOJ Monthly, February 2011](#) on February 13.
Enjoy it.
2010.12.6
[Let's Celebrate the 100th Contest on ZOJ!](#) on December 19.
An **Unusual** Contest powered by ZOJ Staff! Enjoy it.

Copyright © 2001-2009, Zhejiang University ACMICPC Team. All rights reserved.

ACM - ICPC

ACM-ICPC World Finals
May 27 - 31
2011
ORLANDO
at the Peabody Orlando

IBM event sponsor

Register/Log in
acmicpc
international collegiate programming contest
IBM event sponsor

world map | what's new | about icpc

Regional Contest Info Finder...

(Find your regional contest by clicking the map)

World Finals 2010 Video:

contact | world finals | regionals | acm | ibm

© international collegiate programming contest

Google Code Jam

code jam

hello, world!

Code Jam 2011

[Code Jam Home](#)[Schedule](#)[Terms and Conditions](#)[Frequently Asked Questions](#)[Quick-Start Guide](#)

Archive

[Practice and Learn](#)[Code Jam History](#)[Sign in](#)

Google Code Jam

Google Code Jam 2011

Do you enjoy solving tough problems and grappling with technical challenges? Then enter Google Code Jam!

Google Code Jam is a programming competition in which professional and student programmers are asked to solve increasingly complex algorithmic challenges in a limited amount of time. The contest is all-inclusive: Google Code Jam lets you compete in the programming language and development environment of your choice.

The competition consists of four online rounds, starting on May 6th and culminating in the world finals at Google's office in Tokyo, Japan.

Google Code Jam 2011

[Participate](#)

↑ Click here to participate in Code Jam.

→ [Practice](#) on previous contests.

→ New to Code Jam? Read our [Quick-Start Guide](#).

→ Join us at Channel #gcj on [Freenode](#). For more information on IRC, go [here](#).

→ Join our Google Groups for [discussion](#) and [announcements](#).

→ Follow us on [Facebook](#) or Twitter [@googlecodejam](#)

→ If you have any questions or comments, please [contact us](#)

© 2008-2011 Google [Google Home](#) - [Terms and Conditions](#)

powered by
Google App Engine

Topcoder Open

Program Blog Movies Photos Twitter [TOPCODER]

Register Now!

2011 TOPCODER OPEN

Overview Algorithm Design Development Marathon Mod Dash Studio Arena

Algorithm Algorithm Schedule Algorithm Rules Algorithm Leaderboard Algorithm Final Results

Welcome to the Algorithm Competition!

The Algorithm Competition, as part of the TopCoder Open, is a timed contest where all contestants compete online and are given the same problems to solve under the same time constraints. The competition is available in four programming languages: Java, C#, C++, and VB.NET. Competitors will be competing in rounds from May 14 – August 6, 2011 leading up to the Finals, being held at the Westin Diplomat Resort & Spa, Hollywood, Florida, USA from September 25 – 28, 2011. The top 24 competitors will win this fabulous trip to compete for cash prizes and bragging rights!

Each online and onsite round of competition (including the Qualification Rounds) consists of three phases: Coding Phase, Challenge Phase, and System Testing Phase. (Note: The format of these competition rounds is similar to the format of TopCoder Single Round Matches.)

How does it work?

The **Coding Phase** is a timed event where all contestants are presented with the same three questions representing three levels of complexity and, accordingly, three levels of point earnings potential. Points for a problem are awarded upon submission of any solution that successfully compiles and are calculated on the total time elapsed from the time the problem was opened until the time it was submitted. During the online rounds, the Coding Phase will last 75 minutes. During the onsite rounds, the Coding Phase will last 85 minutes.

Event Sponsors

facebook

Facebook Hacker Cup

facebook

Buscar

Inicio Perfil Cuenta ▾

HACKER CUP
facebook.com/hackercup
Facebook

Muro

Información

Eventos

FAQs

Notas

Información

The Facebook Hacker Cup es un anual worldwide programming competition wher...

Ver más

A 130.854 personas les gusta esto

Me gusta

Facebook Engineering

Ya no me gusta

Crear un(a) página

Denunciar página

Compartir

Facebook Hacker Cup

Sitio web

Muro

Facebook Hacker Cup

Interested in learning more about hackathons? MTV stopped by our offices to follow a few engineers though a hackathon and talk with others who've had their lives changed by their connections on Facebook.

Meet The Faces Behind Facebook | News Video | MTV

Watch the News Video "Meet The Faces Behind Facebook" for free on MTV.com. Watch free full length News Videos on MTV.com.

31 de marzo a las 14:58 · Me gusta · Comentar · Compartir

A Satyajit Bhadange y otras 253 personas más les gusta esto.

Ver los 69 comentarios

Escribe un comentario...

Facebook Hacker Cup

Hacker Cup Awesomeness 2011 [HD]

Duración: 2:07

13 de marzo a las 0:07 · Ya no me gusta · Comentar · Compartir

A ti, Jesus Mesias, Chandra Sekar Narayanan, Satyajit Bhadange y otras 779 personas más os gusta esto.

Ver los 119 comentarios

Escribe un comentario...

Tú y Facebook Hacker Cup

A 41 amigos les gusta esta página.

Páginas recomendadas Ver todas

Comisión Nacional Supervisora de E...
Cendoc Conasey te sugirió que visites su página.
Me gusta

Fajr Qail
Shinab Rabea te ha sugerido que visites su página.
Me gusta

Patrocinado Crear un anuncio

Top-notch developer! binpress.com

Your life just got easier. Publish and sell your source-code for passive, worry-free income. Join our code marketplace NOW!

PHP Developer? donanics.com

We got a Job for you!

Chat (34)

IEEEExtreme

IEEE^{XTREME} PROGRAMMING COMPETITION

[Home](#) [Compete](#) [Register](#) [Community](#)

IEEEExtreme 24-Hour Programming Competition

1 IEEEExtreme is a global challenge in which teams of IEEE student members – supported by an IEEE Student Branch, advised and proctored by an IEEE Member – compete in a 24-hour time span against each other to solve a set of programming problems.

IEEE^{XTREME} PROGRAMMING COMPETITION 4.0

[Write comment \(0 Comments\)](#)

IEEE
Advancing Technology
for Humanity

Website Login

Username

Password

[Login](#)

No account yet? [Register](#)

Who's online?

None

Concurso Peruano de Programación



[Inicio](#)
[Calendario](#)
[Participar](#)
[Términos y reglas](#)
[Ranking](#)
[Registro](#)
[Auspiciadores](#)
[Contacto](#)

[Presentación](#)
[Objetivos](#)
[FAQ](#)
[Enlaces](#)

CODESECC 2010

[Regístrate Aquí](#)

[Olvidaste tu contraseña?](#)



CONCURSO PERUANO DE PROGRAMACIÓN

CodeSecc será utilizado por primera vez en el Concurso Peruano de Programación

SECC

CodeSecc

Presentación

CodeSecc es un motor de concursos de programación que fomenta la creatividad, el trabajo en equipo y la Innovación en el análisis de problemas computacionales y su solución a través de programas de cómputo, además de que permite a sus participantes el probar sus habilidades de programación competitiva y comparar sus avances con los de sus compañeros.

CodeSecc es el motor del concurso de programación utilizado en el ACM ICPC, la competencia de programación más grande del mundo.

Básico

- Librerías de tu lenguaje
- Complejidad en tiempo y espacio
- Ordenamiento
 - Bubble Sort
 - Selection Sort
 - Merge Sort
 - Counting Sort
 - Contar inversiones
- Backtracking
 - 8 reinas
 - Sudoku
- Algoritmos Voraces (Greedy)

Básico

- Grafos
 - Búsqueda en profundidad (DFS)
 - Búsqueda en anchura (BFS)
 - Algoritmo de Dijkstra
 - Algoritmo de Floyd - Warshall
 - Árbol de expansión mínima
 - Algoritmo de Prim
 - Algoritmo de Dijkstra
- Programación Dinámica
 - Problemas de monedas
 - LIS, LCS
 - Edit distance
 - Bitmask
 - Reducción de memoria

Básico

- Matemática
 - MCD, MCM
 - Inducción Matemática
 - Demostración por contradicción
 - Búsqueda binaria
 - Coeficientes binomiales
- Teoría de Números
 - Test de primalidad
 - Criba de Eratóstenes

Intermedio

- Grafos
 - Union-Find
 - Arbol de expansión mínima
 - Algoritmo de Kruskal
 - Aplicaciones de DFS
 - Puntos de articulación
 - Puentes
 - Componentes fuertemente conexas
- Flujo máximo
- Exponenciación de Matrices
- Algoritmos de cadenas
 - KMP
 - Trie

- **Clasificación de problemas :**

<https://docs.google.com/document/d/1t6xQ-4ZMvinyxcElmtrMqrqoFPaMd-IW4uaDGced3i0/edit?hl=en>

- **Códigos de soluciones :**

<https://github.com/marioyc/Online-Judge-Solutions>