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JET
BRAINS

NWERC 2022

Programme Booklet



```
>>> is_fun(nwerc)  
true
```



ASML



FLOW ■ TRADERS





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Sponsors

IMC Trading	Platinum
Jane Street	Gold
Netcompany	Gold
Flowtraders	Gold
ASML	Silver
Fox-IT	Silver
JetBrains	Global
Huawei	Global

This booklet is a publication of the CHipCie, which is a committee of W.I.S.V. 'Christiaan Huygens'.

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ICPC Europe Contests

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programming contest



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Foreword

Dear contestants, coaches and all other programming enthusiasts,

Welcome to NWERC 2022! We are very excited to have you here and we are looking forward to this fun filled weekend. NWERC is hosted this year in Delft at Delft University of Technology. We hope that you not only have an amazing time at the contest, but that you will also get to know Delft and Delft's surroundings a little bit.



In this booklet, you can find information, besides of course about our fantastic programming contest, about Delft, activities in Delft, the contest location, jury, systems and the schedule of this weekend.

The CHipCie, a committee consisting of 12 very driven (ex-)students from the study association Christiaan Huygens, has been working very hard to make this weekend possible! From systems to logistics of the whole contest, everyone has tried to make it the best experience possible. But without the jury, this contest would not be possible. They did their absolute best to come up with the most interesting, challenging and fun problems for the contestants to solve!

We hope that you will have an amazing time this weekend! Good luck with the contest, but most important of all: Have fun!

On behalf of the CHipCie,
Nadyne Aretz
Contest Director NWERC 2022



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Committee



Nadyne Aretz
Chairwoman



Elise Deen
Secretary



Laura Pircalaboiu
Treasurer



Maarten Sijm
Jury Affairs



Robert van Dijk
Head of Systems



Maarten Weyns
Systems Affairs



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Committee



Raoul Bruens
Logistic Affairs



Yoshi v.d. Akker Thomas Verwoerd
Operational Affairs



Thomas Verwoerd
Coaches Affairs



Brian Witmer
Promotion Affairs



Merel Steenbergen
External Affairs



Els Brouwer
Qualitate Qua



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Welcome

Population

Welcome to the city of knowledge of the Netherlands: Delft! Here, many technical institutions have settled themselves. Of course, you can find the Delft University of Technology here, but also the research institutes TNO, Deltares, and many more. Even though the campus of the TU Delft is relatively separate from the city centre, student life can be found anywhere. Many student associations are hosted in the city centre between the shops, restaurants, and rich history.

The university has some interesting effects on the population in Delft. Did you know that the ratio of male residents between 20 and 30 year old is about twice as high in Delft as the national average? And for the age range 20–24, this is even almost three times as high as the national average!

Associations

Student life is very rich in Delft: many students are part of a student association, such as fraternities and sports associations, and almost all are part of a study association. All these organisations host fun events and bring students closer together. This event, NWERC 2022, has been organised by the study association for Mathematics and Computer Science in Delft: W.I.S.V. 'Christiaan Huygens'.



- = Must see / Must do
- = Shopping
- = Food & Drinks

- De Delftse Pauw
Pottery/Delfter Blau/Faillence
- Old Church/Alte Kirche
/Vieille Eglise
- Museum/mus Prinsenhof Delft
- Vermeer Centrum Delft
- Vermeer Vlaardingen/Vermeer Zentrum
- De Candelier
Pottery/Delfter Blau/Faillence
- Stadhuis
City Hall/Rathaus/Mairie
- Nieuwe Kerk
New Church/Neue Kirche
/Nouvelle Eglise
- Rondvaart Delft
Canal boat/Hafenfahrtboot
/Bateaux Mouche
- Theater de Veste
- Dospoort
- NS Station
- Trainstation/Bahnhof/Gare
- Botanische Tuin
Botanical Garden/Botanischer Garten/Jardin botanique
- Royal Delft
Porcelain/Delfter Blau/Faillence
- Technische Universiteit Delft
Technical University/Techische Universität/Université technique
- Science Museum
Museum/muséum
- Maria van Jesse Kerk
Catholic church/Eglise catholique/Katholische Kirche
- Marktplein
Market square/marché
- Windmill/windmühle/moulin
- Recreatiegebied Delftse Hout
Parc/Park/parque
- Museum Paul Tetar van Elven
Museum/musée
- Het Havenkantoor

Toeristen Informatie Punt
Tourist Information
Touristische Information
Information Touristique

Tramlijn 1
Tram 1/Streassbahn 1

Tramhalte
Tram stop/Haltestelle/
arrêt du tram

Hofje
Almshouse/Innenhof/Hospice

Fietssafe
Bicycle garage/Fahradständer/
Ratelier

Invalidentoilet
Disabled toilet
Behindertentoilette
WC handicapé

Camping



The Aula

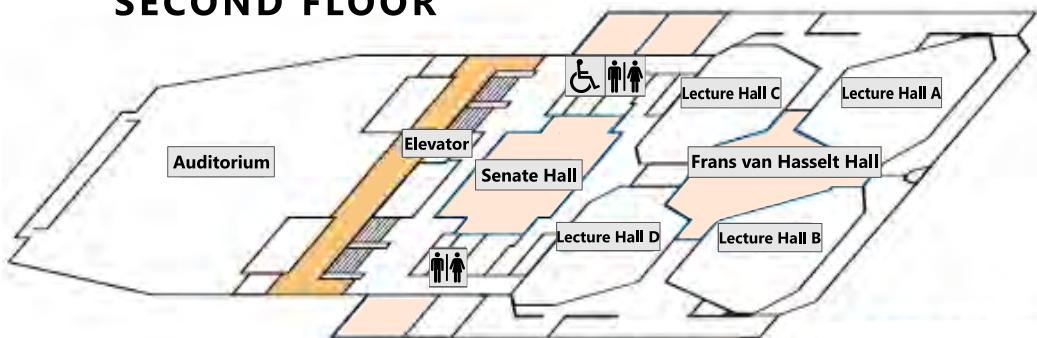


The Aula is one of TU Delft's general buildings, meaning it's not linked to a specific study programme. At the time of building, and when it was finished in 1966, it was the heaviest building in the Netherlands with a structure of prestressed concrete. There's around 35 kilometer of pretension cables in the building! Its official nickname is 'The frog', but many people also think it resembles a turtle or a UFO.

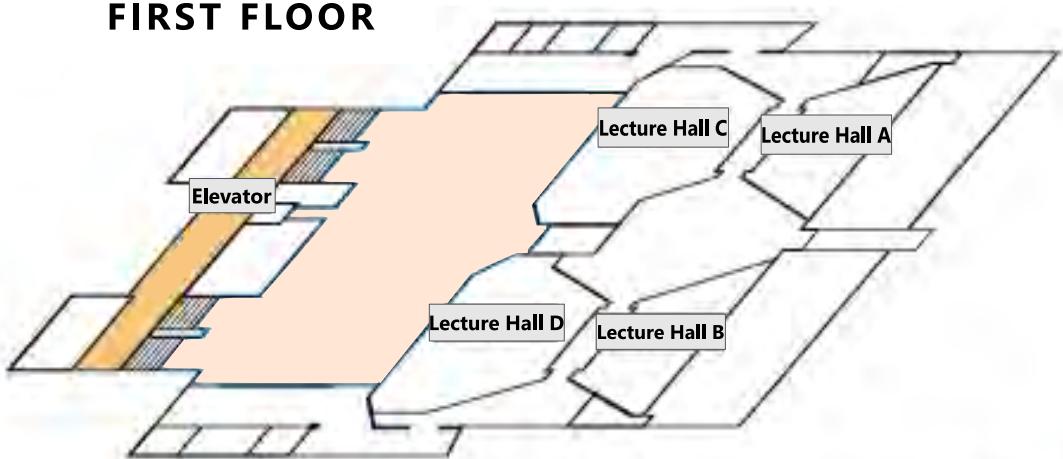
The largest hall in the Aula is the Auditorium, with 1040 chairs. It's hosted in the 'floating' front part of the building. That hall was often used for first-year courses for the Computer Science and Engineering bachelor in 2018, when the bachelor consisted of more than 900 freshmen.

The building is so characteristic for the campus that some students even built it in Minecraft (see picture).

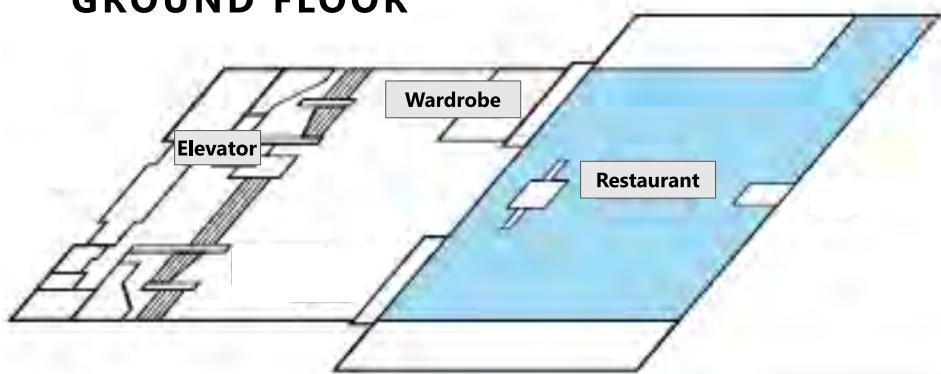
SECOND FLOOR



FIRST FLOOR



GROUND FLOOR



ASML

During the contest, the computer is your most valuable resource (perhaps apart from coffee). A brief explanation of our systems can be found on this page.

Hardware

During the contest each team will have exactly one laptop (with a mouse attached). It is a HP 650 G5 Core i5 with 8 GB of RAM.

During the contest

An introductory presentation to the system will be given on Saturday; please refer to the schedule for the exact time. At this presentation, do not hesitate to ask any questions you might have. Furthermore, if you stumble upon any problems with the system during the test session or contest, let us know and we will be more than happy to assist you.

Systems Software

The only operating system available to you will be Ubuntu 22.04. The jury will run your submissions on the same system with the same compilers. During the contest, you will be able to choose between the languages C, C++, Python, Java, and Kotlin. Using different languages for different problems is allowed. For a complete list of the available IDEs, editors, language versions and compiler commands, see our website: 2022.nwerc.eu/systems.



Jury and Rules

Keyboard, mouse, and TRDs should be handed in at the registration.

We follow the World Finals' Rules, so a team is not allowed to bring any reference materials such as books, program listings, or notes (except for the TRD)! You may not bring any electronic device or machine-readable media. You may bring pens or pencils, but not paper. Winter coats, bags, etc. should not be brought to the contest floor.

Each contestant may bring a copy of a Team Reference Document. This may contain up to 25 pages of reference materials, single-sided, letter or A4 size, with pages numbered in the upper right-hand corner and your university name printed in the upper left-hand corner. Text and illustrations must be readable by a person with correctable eyesight without magnification from a distance of 0.5 meter. It may include handwritten comments and corrections on the fronts of pages only. The document should be in some type of notebook or folder with the name of your institution on the front.

Each team member may bring one printed, unannotated natural language dictionary. You may bring mascots such as stuffed animals or party hats provided they do not violate any of the above constraints. If there is any other item you need, please contact the Head of Jury.

Teams are allowed to bring one keyboard. Note that keyboards with pre-programmed macro keys are not allowed. Wireless keyboards are also not allowed. One mouse is allowed too, but is subject to the same macro rule as with the keyboard.

For more Jury Advice, see:
<https://2022.nwerc.eu/jury-advice/>

Team Composition

A student may compete when eligible according to the official ICPC regional rules summarised in the 2022 ICPC Regionals Eligibility Diagram.

A team consists of 3 eligible students. The educational institutions must be from one of the region's member countries. By special request, teams from other countries may be allowed to participate in this region, as stated in the ICPC Regional Rules.

All teams who want to participate must be registered.

A large, semi-transparent black triangle is positioned in the upper right corner of the image. Inside this triangle, there is a photograph of a person from behind, standing at a desk in a dark room. The person is looking at multiple computer monitors displaying code and data. In the background, large windows offer a view of a city skyline at night with many lit buildings.

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Activities

Rotterdam

Rotterdam has Europe's largest sea port and is indispensable for the trade. It's a bustling city and there's a lot to see. Come with us to Rotterdam to see the city during one of our guided tours and go to the Natural History Museum to learn all about nature!

Delft

If you'd like to stay in our beautiful city, you can immerse yourself in culture by taking a Boat Tour (limited capacity), climbing the Old and/or New Church, walking through the beautiful city centre or tasting Delft's Beer at city brewery The Koperen Kat.





Schedule

Saturday

08:30 - 09:30
09:30 - 10:30
10:30 - 12:30
12:00 - 13:00
13:30 - 14:30
14:30 - 18:00
18:00 - 21:00

Late Registration & walk-in
Welcome Speech
Test Session
Lunch
Q&A about Test Session
Activities
Dinner

Sunday

08:30 - 09:00
09:00 - 10:00
10:00 - 15:00

15:30 - 17:00
17:00 - 18:00

Walk-in
Final Information Speech
Contest
Score freeze at 14:00
Solutions & Award Ceremony
Drinks

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true



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Northwestern Europe Regional Contest