EXAMEN DE LA CERTIFICATION COMPLEMENTAIRE

SESSION 2024

RAPPORT DACTYLOGRAPHIE FOURNI PAR LE CANDIDAT

PAGE DE GARDE A UTILISER OBLIGATOIREMENT

SECTEUR DISCIPLINAIRE CHOISI : MATHÉMATIQUES

OPTION CHOISIE : ANGLAIS

INFORMATIONS PERSONNELLES

Nom de famille : LELEU

~~Nom marital~~ :

Prénom : Frédéric

Date de naissance : 16/05/1974

Enseignement et qualité :

Public ➡ Titulaire ☒ Stagiaire ☐ Contractuel en CDI ☐

Privé ➡ Contrat définitif ☐ Contrat provisoire ☐ Maître délégué en CDI ☐

Corps : Certifié(e) ☐ PLP ☐ CAPEPS ☐ Agrégé(e) ☒ Professeur des écoles ☐ Autre ☐

Discipline : MATHÉMATIQUES

Etablissement d'exercice : LYCÉE RABELAIS, SAINT BRIEUC

Rapport dactylographié d'au plus **5 pages (annexes comprises) comportant** :

- Un curriculum vitae détaillé précisant les titres et diplômes obtenus
- Les expériences d'enseignement, d'ateliers de stage, d'échanges, de séjours professionnels à l'étranger, de sessions de formation, de projets partenariaux, pouvant comprendre un développement commenté de celle de ces expériences qui lui paraît la plus significative
- Tout autre élément tangible marquant l'implication du candidat dans le secteur choisi (travaux de recherche, publications effectuées à titre personnel ou professionnel)

Le rapport du candidat doit être téléversé au format PDF (NOM_Prénom.pdf)
dans l'application CYCLADES, **au plus tard le vendredi 27 octobre 2023**

AUCUN DOSSIER NE SERA ACCEPTE PAR COURRIEL OU PAR ENVOI POSTAL

FRÉDÉRIC LELEU

Mathematics and Computer Science Teacher

✉ 29, avenue d'Armorique, 22000 Saint Brieuc
@ frederic.leleu@ac-rennes.fr
📞 06 99 13 08 41

TEACHING EXPERIENCE

Teaching Assistant
EPITA
📅 1998 - 2000
📍 Paris-Villejuif (94)

Math teacher
Éducation Nationale
📅 2000 - Present
📍 Argenteuil (95), Ermont (95), Saint Brieuc (22)

CS teacher
Éducation Nationale
📅 2013 - Present
📍 Ermont (95), Saint Brieuc (22)

Python Trainer
Académie de Rennes
📅 2017 - 2018
📍 Rennes (35)

CS Teacher / Educator
INSPÉ de Bretagne
📅 2022 - 2023
📍 Rennes (35)

EDUCATION

Maîtrise de Mathématiques Pures
Université Pierre et Marie Curie Paris 6
📅 1996
📍 Paris (75)

CAPES de Mathématiques
Université Pierre et Marie Curie Paris 6
📅 2000
📍 Paris (75)

Agrégation de Mathématiques
Université Paris-Saclay
📅 2009
📍 Orsay (91)

DIU Formation à la Science Informatique - ISN
Université Versailles Saint-Quentin
📅 1996
📍 Versailles (78)

Enseigner l'informatique au lycée
Université Rennes 2
📅 2020
📍 Rennes (35)

LANGUAGES

French: Native Speaker
English : Level C1
Spanish : Level B2
Slovak : Level A2

INTERESTS

Programming, Music, Reading (mainly in English)

I started teaching mathematics almost 25 years ago, but I've been programming on a daily basis since I was 13.

15 years ago or so, I decided to explain to my math students how a sorting algorithm works (maybe I was getting a bit bored of teaching the same math again and again, and never getting any question back from my pupils). I was amazed by the way they reacted to the class : they seemed much more focused than usual and teemed with numerous questions, each one more interesting than the other.

So when ISN was created I embraced the opportunity with a lot of enthusiasm and now that NSI is here to stay I spend most of my time teaching computer science. Officially, I'm still teaching "Mathématiques pour l'Informatique" in BTS SIO, but I try to colorate this math teaching as much as I can with Computer Science and I like to think that most of my students are grateful for this.

This year I started teaching mathematics in English (acting as a substitute for a colleague who has health issues) and until now it has been a pleasant, rewarding experience. You will find below an example of what I'm actually doing, which I'll be glad to explain.

Right now, my main concern is that I'm not yet able to gauge my pupils' level in English. I obviously try to speak as much English as possible but sometimes, I guess It would be better to explain some aspects of the problem we're trying to solve in French.

However, the main reason that pushes me to get this certification is Computer Science. Indeed, it abounds with technical terms, most of which are in English, so when teaching I constantly find myself switching from French to English, then back to French and so on. With this certification I could offer my students the possibility to have a whole lesson in English (which is in my opinion a really good option considering the way technique and English are intertwined when it comes to Computer Science). I consider myself lucky : when my pupils are working with computers, their group is split in two. As I'm sure at least half of them would like to try a whole class in English maybe we could dedicate one of the subgroups to this.

Secret Santa (solution)

watch the video here : `https://video.toutatice.fr/video/41820-secret-santa/`

From 00:00 to 00:42

Explain what is Secret Santa.

Answer

> Secret Santa is a method which makes each person in a group choose another one to give a present to, so that everybody buys a present for someone and also gets one.

From 01:22 to 01:36

What are the two fundamental things for a perfect Secret Santa ?

Answer

> 1. It should be anonymous : nobody should know who bought his or her present.
>
> 2. It should be perfectly random : you should have the same probability of getting a present from each member of the group.

From 01:44 to 02:03

How does Hannah describe the "hat method" ?

Answer

> Everybody writes his or her name on a piece of paper and puts it in a hat. Then each member of the group successively picks a paper and reads a name. If someone picks his or her own name, he or she puts the paper back in the hat, otherwise, he or she will have to offer a present to the person whose name's written on the paper.

From 02:03 to 02:46

What is the obvious problem with this method and what does the group have to do in this case ?

Answer

> If the last person's left with his or her own paper, there's nothing to do but start over.

Why is there also an anonymity violation if the person before the last one pulls his or her name ?
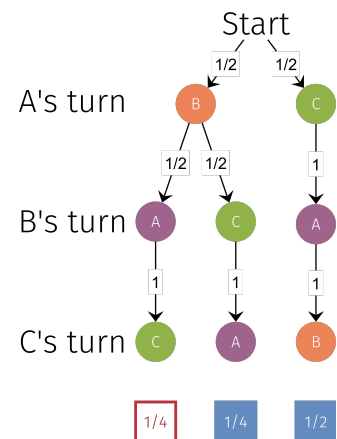
Answer

Because in this case, he or she must take the only other remaining paper and everybody knows that the last person will get his or hers.

From 02:46 to 10:59

Despite of anonymity issues, let's see how Secret Santa works with 3 persons.

Complete this probability tree.

When the method works, can we say is it completely random ? Justify your answer.

Answer

No it is not, because for example, when the method works A it twice likely to buy for C than for B.

From 11:00 till the end

Explain what's the right way to organize a Secret Santa.

Answer

– Take as many cards as the number of people and write "You are number i" at the top and "You are buying for i" the bottom of each (i starting from one to n, n being the number of people).

– Lay them face down and shuffle them.

– Cut them all up in the middle.

– Shift the tops along by one.

– Everybody take the two corresponding parts and find what's his or her number and who he or she is buying for.
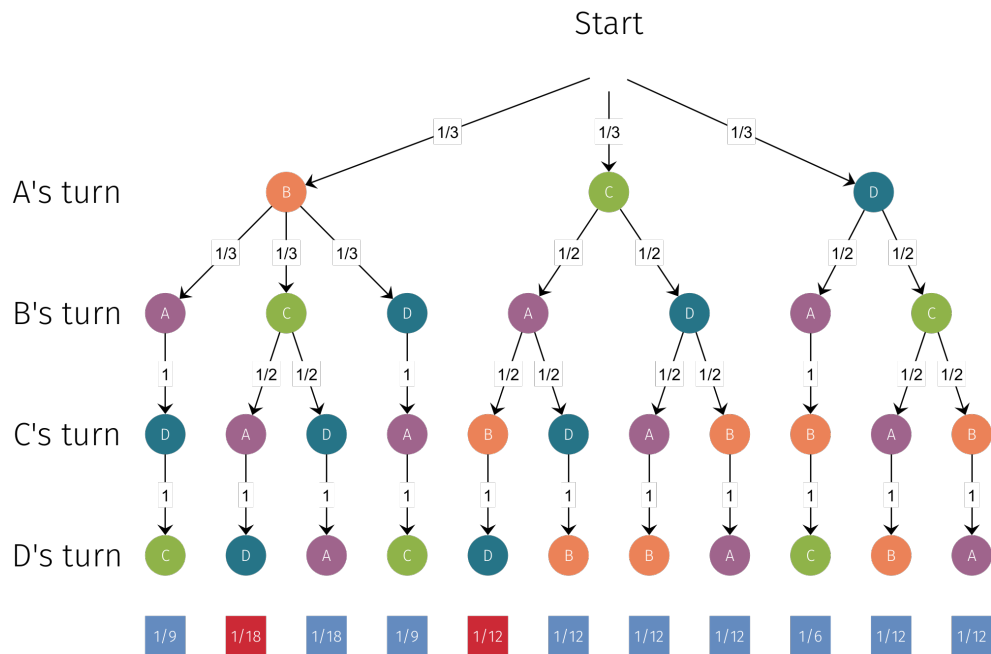
Bonus

What's a derangement ?

Complete the following tree for a "hat method" with 4 person.

What's the probability of a failure ?