ALGO
QCM

1. **La construction d'une liste récursive est basée sur ?**
   (a) L'ajout d'un élément à la première place d'une liste
   (b) La récupération du reste de la liste
   (c) L'insertion d'un élément à la $K^{ième}$ place

2. **Que représentent opé1 et opé2 dans l'axiome suivant (dans lequel e est un élément et l une liste)** `opé1(opé2 (e,l)) = l` **?**
   (a) opé1 = premier, opé2 = tête
   (b) opé1 = cons, opé2 = premier
   (c) opé1 = premier, opé2 = cons
   (d) opé1 = fin, opé2 = cons
   (e) opé1 = fin, opé2 = premier

3. **La construction d'une liste itérative est basée entre autres sur ?**
   (a) La suppression du $K^{ième}$ élément d'une liste
   (b) La récupération du reste de la liste
   (c) L'insertion d'un élément à la $K^{ième}$ place
   (d) L'ajout d'un élément en tête de liste

4. **Que représentent opé1 et opé2 dans l'axiome suivant (dans lequel e est un élément et l une liste)** `opé1(opé2 (e,l)) = e` **?**
   (a) opé1 = premier, opé2 = tête
   (b) opé1 = cons, opé2 = premier
   (c) opé1 = premier, opé2 = cons
   (d) opé1 = fin, opé2 = cons
   (e) opé1 = fin, opé2 = premier

5. **Quelles opérations ne définissent pas une liste récursive ?**
   (a) debut
   (b) longueur
   (c) fin
   (d) cons
   (e) ième

6. **Quelles opérations définissent un vecteur ?**
   (a) entier
   (b) longueur
   (c) vect
   (d) changer-ième

7. **Une opération sans argument est ?**
   (a) impossible
   (b) une constante
   (c) une variable
   (d) partielle

8. **Quelles opérations définissent une liste itérative ?**
   (a) debut
   (b) longueur
   (c) fin
   (d) insérer
   (e) ième

9. **Une liste est une structure intrinsèquement ?**
   (a) Récursive
   (b) Itérative
   (c) Répétitive
   (d) Alternative

10. **Que la liste soit récursive ou itérative, en fait nous décrivons la même donnée, seule la manière de s'en servir diffère !**
   (a) Vrai
   (b) Faux

QCM 9

lundi 17 octobre 2022

Question 11

Soit X une variable aléatoire finie telle que $X(\Omega) = \{-1, 2, 3, 5\}$. On suppose que

$$P(X = -1) = 0,2 \quad P(X = 3) = 0,4 \text{ et } P(X = 5) = 0,1$$

On a

a. $P(X = 2) = 0,7$

b. $P(X = 2) = 0,3$

c. $P(X \geq 3) = 0,5$

d. $P(X \geq 3) = 0,1$

e. Aucune des autres réponses

Question 12

On lance un dé équilibré à 6 faces. Si le dé amène 1 ou 2, on gagne 1 point, si le dé amène 3 ou 4, on gagne le double du résultat donné par le dé et si le dé amène 5 ou 6, on ne gagne aucun point. Soit X la variable aléatoire égale au nombre de points obtenus. On a

a. $X(\Omega) = [\![1, 6]\!]$

b. $X(\Omega) = \{1, 6, 8\}$

c. $P(X = 1) = \frac{1}{3}$

d. $P(X = 1) = \frac{1}{6}$

e. Aucune des autres réponses

Question 13

Soit X une variable aléatoire prenant les valeurs 0, 1 ou 2 telle que

$$P(X = 0) = \frac{1}{6}, \quad P(X = 1) = \frac{1}{4} \text{ et } P(X = 2) = \frac{7}{12}$$

L'espérance de X est donnée par

a. $E(X) = \frac{1}{6} + \frac{1}{4} + \frac{7}{12}$

b. $E(X) = 0 \times \frac{1}{6} + 1 \times \frac{1}{4} + 2 \times \frac{7}{12}$

3

c. $E(X) = \sum_{k=0}^{2} kP(X = k)$

d. $E(X) = \sum_{k=0}^{2} k^2 P(X = k)$

e. Aucune des autres réponses

Question 14

Soit X une variable aléatoire telle que $X(\Omega) = [\![0, n]\!]$. La variance de X est égale à

a. $\text{Var}(X) = E(X - E(X))$

b. $\text{Var}(X) = E\left((X - E(X))^2\right)$

c. $\text{Var}(X) = E(X^2) + (E(X))^2$

d. $\text{Var}(X) = E(X^2) - (E(X))^2$

e. Aucune des autres réponses

Question 15

On lance 6 fois de suite une pièce truquée dont la probabilité de faire « pile » est $p \in]0, 1[$. On suppose les lancers indépendants. La probabilité de faire exactement 4 « pile » sur les 6 lancers est égale à

a. $p^4(1-p)^2$

b. p^4

c. $(1-p)^2$

d. Aucune des autres réponses

Question 16

On lance 6 fois de suite une pièce truquée dont la probabilité de faire « pile » est $p \in]0, 1[$. On suppose les lancers indépendants. On note X la variable aléatoire égale au nombre de « pile » obtenu au cours des 6 lancers. On a

a. L'espérance de X est égale à p.

b. L'espérance de X est égale à $6p$.

c. L'espérance de X est égale à $p(1-p)$.

d. L'espérance de X est égale à $6p(1-p)$.

e. Aucune des autres réponses

4

Question 17

Soient X et Y deux variables aléatoires prenant leurs valeurs dans $[\![0, n]\!]$. On a

a. $E(2X+3) = 4E(X)$

b. $E(X+Y) = E(X) + E(Y)$

c. $\text{Var}(2X+3) = 2\text{Var}(X) + 3$

d. $\text{Var}(X+Y) = \text{Var}(X) + \text{Var}(Y)$

e. Aucune des autres réponses

Question 18

On tire au hasard une carte dans un jeu classique de 32 cartes. On considère l'événement A : « La carte tirée est un roi » et l'événement B : « La carte tirée est un carreau ». On a

a. $P(A \cup B) = \dfrac{12}{32}$

b. $P(A \cup B) = \dfrac{11}{32}$

c. $P(A \cap B) = \dfrac{1}{32}$

d. $P(A \cap B) = \dfrac{12}{32}$

e. Aucune des autres réponses

Question 19

Soient A et B deux événements d'un espace probabilisé fini $(\Omega, \mathscr{P}(\Omega), P)$. On a

a. $P(\Omega) = 1$

b. $P(A \cup B) = P(A) + P(B) - P(A) \times P(B)$

c. $P(A \cap B) = P(A) \times P(B)$

d. $0 \leq P(A) \leq 1$

e. Aucune des autres réponses

Question 20

Soient A et B deux événements de probabilités non nulles d'un espace probabilisé fini $(\Omega, \mathscr{P}(\Omega), P)$. On a

a. $P(A \mid B) \times P(B) = P(B \mid A) \times P(A)$

b. $P(A \mid B) \times P(A) = P(B \mid A) \times P(B)$

c. Si A et B sont indépendants alors $P(A \mid B) = P(B)$

d. Si A et B sont indépendants alors $P(A \mid B) = P(A)$

e. Aucune des autres réponses

5

CIE S1 MCQ 4

17/10/2010

Grammar

21. I totally _____ with your new school policy. It's a wonderful idea.

a. am agree
b. agree
c. am agreeing
d. agreed

22. John _____ a little upset today. Don't you think?

a. seems
b. seeming
c. is seeming
d. seem

23. Did you know that Jennifer _____ in ghosts?

a. is believing
b. is believe
c. believe
d. believes

24. Lola : Why are you so quiet ?

Diego : No, nothing. I _____ the time when we got lost in the woods.

a. remembers
b. am remembering
c. remember
d. remembering

25. Sean really _____ spiders but I _____ them, personally.

a. is hating/like
b. hate/likes
c. hates/is liking
d. hates/like

Graph 1 : *Do Americans think we have a free speech problem?*

26. What type of graph is graph 1 ?

a. Line graph
b. Bar graph
c. Segmented bar graph
d. Colour graph

27. Which of the following statements is NOT TRUE, in the context of this graph ?

a. This graph was based on a national poll.
b. The poll included residents who are 18 or older.
c. The poll included all US residents throughout the country.
d. Free speech is recognised by the United State Constitution.

28. Why do the percentages in each bar not sum to 100 percent ?

a. Because a segment for 'no response' is not shown.
b. Because a segment for 'not interested' is not shown.
c. Because they are not based on percentages.
d. Because it is in white and can't be seen.

29. Each bar in this graph represents ____.

a. A question.
b. An age-group.
c. Number of people participating in the poll.
d. 100 percent of the data.

30. Which of the following is the most important conclusion from this graph ?

a. The older the prople are, the less they think that freedom of speech is threatened in America.
b. Most Americans, irrespective of their age, gender or political affiliation, agree that there is a somewhat-very serious problem regarding not exercising their freedom of speech.
c. Overall, most Americans don't think that freedom of speech is a serious problem in the country.
d. The Democrats and the Republicans think very differently regarding freedom of speech.

Crashing Crypto: Is This Time Different?

1. Last week TerraUSD, a stablecoin — a system that was supposed to perform like a conventional bank account but was supported only by a cryptocurrency called Luna — collapsed. Luna lost 97 percent of its value in just 24 hours, apparently destroying some investors' life savings.

2. The event shook the crypto world in general, but the truth is that this world seemed unstable even before the Terra disaster. Bitcoin, the original cryptocurrency, peaked last November and has since declined by more than 50 percent.

3. Here's one way to see that decline. Almost everyone is concerned about the rising cost of living; the Consumer Price Index — the cost of a representative basket of goods and services — has gone up about 4 percent over the past six months. But the cost of the same basket in Bitcoin has risen around 120 percent, which means inflation at an annualized rate of about 380 percent.

4. And other cryptocurrencies have performed far worse. Two cities — Miami and New York — have introduced their own cryptocurrencies, with enthusiastic support from their mayors. MiamiCoin is down more than 90 percent from its peak, and NewYorkCityCoin is down more than 80 percent.

5. By now, we've all heard of them, but what exactly are cryptocurrencies? Many people — including, I fear, many people who have invested in them — probably still don't fully understand them. Saying that they're digital assets doesn't really get at it. My bank account, which I mainly reach online, is also a digital asset, for all practical purposes.

6. What's distinctive about cryptocurrencies is how ownership is established. I own the money in my bank account because the law says I do, and the bank enforces that legal claim by requiring, one way or another, that I prove that I am, in fact, me. Ownership of a crypto asset is established through what's known as the blockchain, an encrypted (hence the name) digital record of all previous transfers of ownership that supposedly removes the need for an external party, such as a bank, to validate a claim.

7. What's the point of this kind of decentralized finance, and what purpose does it serve? Well, I'll get to all that.

8. Although cryptocurrencies are currently way down, crypto fans will reassure you that this has happened before. Bitcoin has always bounced back from previous dips, and investors who HODLed (Held On for Dear Life to their coins, despite falling prices) have ended up with huge capital gains. But there are reasons to believe that this time may be different.

9. In the past, cryptocurrencies kept going up by attracting an ever-growing range of investors. Crypto was once held by a small clique that often had the feel of a cult, motivated in part by a combination of libertarian ideology and fascination with the clever use of technology. Over time, rising crypto prices drew in large numbers of additional investors and some big Wall Street money.

10. And in the past year, crypto marketing has gone really mainstream, with endorsements from celebrities — including Matt Damon, Kim Kardashian and Mike Tyson — not to mention political figures like Mayor Eric Adams of New York and the (unsuccessful) Republican Senate candidate Josh Mandel.

11. One disturbing aspect of this marketing push, by the way, is that those who bought cryptocurrencies relatively recently — and have, therefore, lost a lot of money in the crypto crash — probably consist disproportionately of the kind of people most likely to be influenced by celebrity endorsements. That is, they are probably poorer and less sophisticated than the average investor and badly positioned to handle the losses they've taken over the past few months.

12. In any case, as we look forward, the value of cryptocurrencies will have to rest on their economic uses, which are ...

13. Well, that's just the thing. I've heard many discussions in which crypto supporters have been asked exactly what economic role crypto can play that isn't more easily and cheaply achieved through other means — debit cards, Venmo, etc. Other than illegal transactions, in which crypto may sometimes offer anonymity, I have yet to hear a coherent answer.

14. As it is, cryptocurrencies play almost no role in economic transactions other than speculation in crypto markets themselves. And if your answer is "give it time," you should bear in mind that Bitcoin has been around since 2009, which makes it ancient by tech standards; Apple introduced the iPad in 2010. If crypto was going to replace conventional money as a medium of exchange — a means of payment — surely we should have seen some signs of that happening by now. Just try paying for your groceries or other everyday goods using Bitcoin. It's nearly impossible.

15. And then there's El Salvador, which tried to force the process by making Bitcoin legal tender and heavily promoting and subsidizing its use, in an attempt to make it a true medium of exchange. All indications are that the experiment has been an abject failure.

16. But can crypto really have become such a big deal without any clear economic logic other than pure speculation? Can it really be just a bubble inflated by FOMO, Fear Of Missing Out? Those who question crypto's purpose are constantly confronted with the argument that the hugeness of the industry — at their peak, crypto assets were worth almost $3 trillion — and the amount of money true believers have made along the way proves the skeptics wrong. Can we, the public, really be that foolish?

17. Well, maybe the crypto skeptics are wrong. But on the question of folly, the answer is yes, we can.

QCM English TIM S1-4.

Choose the one right answer to each question.

31) What is **NOT** true about paragraph 1?
a) Luna is a cryptocurrency
b) TerraUSD crashed because it worked like a normal bank account
c) Some people lost all the money they saved all their lives
d) TerraUSD was dependent on Luna

32) Bitcoin peaked last November and has since declined by 50 percent. What is an alternative way of saying this?
a) In November, Bitcoin was skyrocketing, but the value has gone down by half since then.
b) In November, Bitcoin stabilized, but since then the value has risen
c) In November, Bitcoin reached its summit and has flattened out since
d) In November, Bitcoin reached its highest level, but the value has gone down by half since then.

33) Which statement is **INCORRECT** about paragraph 3
a) The Consumer Price Index measures inflation
b) Inflation would be much higher, if you were to pay all your goods and services in Bitcoins
c) Last year, the inflation measured by the Consumer Price Index was 4%
d) It's still much cheaper to pay for your shopping in 'real' money

34) What is the best summary of the second part of paragraph 8?
a) Bitcoin's rate may fluctuate, but always comes back
b) If you hold on to your Bitcoins, you will never lose much money
c) If prices are falling, it's best to hold on for dear life to your cryptocurrency
d) Despite previous recoveries, this time Bitcoin may not bounce back

35) In paragraph 11, the phrase "people most likely to be influenced by celebrity endorsements" refers to?
a) The people who are easily influenced by celebrities
b) The people who like endorsing celebrity influencers
c) People who do not watch media
d) People who probably endorse influencers

36) In paragraph 13 the phrase, "I have yet to hear a coherent answer," means...
a) I haven't heard a convincing answer yet
b) I waited a long time for an answer that is coherent
c) I already had many coherent answers
d) No incoherent answers have been provided

37) What is an alternative way of phrasing paragraph 14
a) Because of its longevity, Bitcoin is completely untrustworthy
b) Bitcoin should be more reliable as a means of payment at this moment, because it's been around for a relatively long time
c) We should give Bitcoin more time to become a reliable payment system
d) Because of its longevity, Bitcoin is completely trustworthy

38) Which phrase is **INCORRECT** about paragraph 14?
a) Cryptocurrencies play almost no role in the economy at this moment in time
b) We are not seeing enough proof that cryptocurrencies are actually used as a conventional means of payment
c) Bitcoin has had enough time to prove itself as a medium of exchange
d) Payment for groceries with Bitcoins is not unconventional

39) What happened in El Salvador?
a) This country made Bitcoin an illegal currency and the experiment seems a great success.
b) This country made Bitcoin an illegal currency and the experiment seems a great failure.
c) This country made Bitcoin a legal currency and the experiment seems a great success.
d) This country made Bitcoin a legal currency and the experiment seems unsuccessful.

40) Which statement best summarizes the author's conclusion?
a) Crypto currencies will prove the sceptics wrong because people are gullible and foolish.
b) Because of gullibility and folly, crypto currencies will never become a real success.
c) Maybe he is wrong to be skeptical about cryptos, but he believes the public should be more careful.
d) The size of the industry proves the skeptics wrong.

QCM Physique/Electronique – InfoS1

Pensez à bien lire les questions ET les réponses proposées

Pour les questions suivantes, une ou plusieurs bonnes réponses sont possibles.

Q41. Parmi les équations suivantes, entourer celles qui sont justes :

a. $\frac{d\overrightarrow{U_x}}{dt} = 0$

b. $\frac{d\overrightarrow{U_\rho}}{dt} = -\dot{\theta}.\overrightarrow{u_\theta}$

c. $\frac{d\overrightarrow{U_\rho}}{dt} = \dot{\theta}.\overrightarrow{u_\theta}$

d. $\frac{d\overrightarrow{U_\theta}}{dt} = -\dot{\theta}.\overrightarrow{u_\rho}$

Q42. Dans la base polaire, le vecteur position se note :

a. $\vec{\rho} = \rho\,.\overrightarrow{u_\rho}$

b. $\vec{\rho} = \rho\,.\overrightarrow{u_\theta}$

c. $\vec{\rho} = \rho\,.\overrightarrow{u_\rho} + \theta\,.\overrightarrow{u_\theta}$

d. *Aucune des réponses n'est juste*

Q43. Dans la base polaire, l'expression générale du vecteur vitesse se note :

a. $\vec{v} = v\,.\overrightarrow{u_\rho}$

b. $\vec{v} = \dot{\rho}\,.\overrightarrow{u_\rho} + \dot{\theta}\,.\overrightarrow{u_\theta}$

c. $\vec{v} = \dot{\rho}\,.\overrightarrow{u_\rho} - \dot{\theta}\,.\overrightarrow{u_\theta}$

d. $\vec{v} = \dot{\rho}\,.\overrightarrow{u_\rho} + \rho.\dot{\theta}\,.\overrightarrow{u_\theta}$

Q44. Dans la base polaire, dans le cas d'un mouvement circulaire, on peut dire que :

a. $\dot{\rho} = 0$

b. $\vec{v} = R.\dot{\theta}\,.\overrightarrow{u_\theta}$

c. $\vec{v} = \dot{\rho}\,.\overrightarrow{u_\rho}$

d. $\ddot{\rho} = 0$

Q45. Dans la base cartésienne, la norme du vecteur vitesse $\vec{v} = v_x\,.\overrightarrow{u_x} + v_y\,.\overrightarrow{u_y}$ s'écrit :

a. $\sqrt{v_x^2 + v_y^2}$

b. $\sqrt{v_x + v_y}$

c. $v_x^2 + v_y^2$

d. $v_x + v_y$

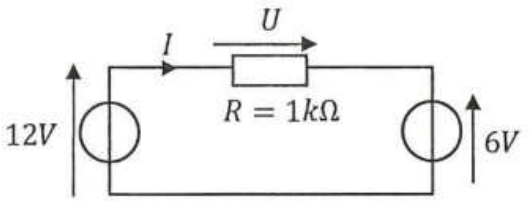
Q46. Si deux dipôles sont parcourus par le même courant, on dit qu'ils sont :

a. En parallèle b. En série

Q47. Si l'on applique la loi d'Ohm avec U en V et I en mA, on obtient directement R en :

a. $M\Omega$ *b.* $k\Omega$ *c.* $m\Omega$ d. Ω

Soit le circuit ci-contre (Q48&49)



Q48. Que vaut la tension U ?

a. $-18V$

b. $-6V$

c. $6V$

d. $18V$

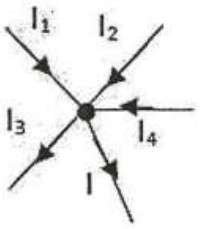
Q49. Que vaut l'intensité du courant I ?

a. $-18\ mA$ c. $6\ mA$

b. $-6\ mA$ d. $18\ mA$

Q50. Dans le schéma ci-dessus, on a les courants suivants :

$$I_1 = 5mA\ ;\ I_2 = 1mA;\ I_3 = 1mA;\ I_4 = -3mA$$



Calculer le courant I.

a- $I = 4\ mA$ c- $I = 10\ mA$

b- $I = 2\ mA$ d- $I = 8\ mA$

QCM 3
Architecture des ordinateurs

Lundi 17 octobre 2022

Pour toutes les questions, une ou plusieurs réponses sont possibles.

51. Quel est le résultat de la soustraction suivante : $1000_{20} - 1_{20}$?
    - A. $1FFF_{20}$
    - B. Aucune de ces réponses.
    - C. FFF_{20}
    - D. JJJ_{20}

52. 1 Mio =
    - A. 1024 Kib
    - B. 2^{23} octets
    - C. Aucune de ces réponses.
    - D. 2^{20} bits

53. 153_5 =
    - A. 110101_2
    - B. 53_{10}
    - C. Aucune de ces réponses.
    - D. 10011001_2

54. 1010110001100011110_2 =
    - A. $AC638_{16}$
    - B. $2B18E_{16}$
    - C. Aucune de ces réponses.
    - D. 530616_8

55. 145_{10} =
    - A. 1_{145}
    - B. 219_8
    - C. Aucune de ces réponses.
    - D. 357_6

12

56. Un bit est :
    A. La plus grande unité d'information qu'un ordinateur peut manipuler.
    B. La plus petite unité d'information qu'un ordinateur peut manipuler.
    C. Un groupe de plusieurs chiffres qui représente un nombre.
    D. Un groupe de plusieurs chiffres qui représente une donnée.

57. Choisir la (les) réponse(s) correcte(s).
    A. Le bit le plus à droite d'un mot est le MSB.
    B. Le bit le plus à gauche d'un mot est le LSB.
    C. Le bit le plus à gauche d'un mot est le MSB.
    D. Le bit le plus à droite d'un mot est le LSB.

58. Quel est le complément à 1 du mot sur 8 bits suivant : 00000000_2
    A. 00000000_2
    B. 00000001_2
    C. 11111111_2
    D. 11111110_2

59. Quel est le complément à 2 du mot sur 8 bits suivant : 00000000_2
    A. 00000000_2
    B. 00000001_2
    C. 11111111_2
    D. 11111110_2

60. Quel est le complément à 2 du mot sur 8 bits suivant : 36_{16}
    A. $C9_{16}$
    B. CA_{16}
    C. CB_{16}
    D. Aucune de ces réponses.