
Consider the following conditions:

1. you are given four identically shaped marbles that one of them weighs differently
2. you don't know if the divergent is lighter or heavier
3. you have a balance scale which is the only scale on earth capable of telling the difference between a normal marble and the divergent marble
4. you also have access to 8 other extra normal marbles. (that makes it 4 potential candidates and 8, certainly, normal marbles.)

How do you use the scale, no more than two times, to spot the fake marble?

Sample answer:

Well, we compare three of the candidates with three of those normals that we have; They either balance or differ. If they balance, the divergent is the candidate that is left out and we have found it with using the scale just once. If they don't balance, the candidates are either lighter or heavier than normals and we have another chance to use the scale.

We will solve it for the case that the candidates are heavier and the other case should be solved similarly.

So now, we have three candidates, one chance to use the scale, and we know that the divergent is heavier. Well, it's easy, we put one of the heavies on the left bucket and another one on the right bucket. If they balance, the divergent is the one that is left out. If they don't balance, the heavier is the fake marble.

Hard disk drives and magnetic tapes are examples of ..... .

Sample answer:

storage media
or:
devices that we can store data in them.

The common abbreviation for **h**ard **d**isk **d**rive is ..... .

Sample answer:

H.D.D.

Translate the Persian paragraph in the box to English.

بدیهی است که ارزیابیِ کیفیّت تصویرِ انسانی در کاربردهای برخط و برای تعداد بالای تصاویر قابل استفاده نیست. در این موارد، مدلی محاسباتی مطلوب است که بتواند قضاوت انسانی را با دقت و سرعت قابل قبول پیش‌بینی نماید. طراحی چنین مدلی، ارزیابی کیفیّت تصویرِ «محاسباتی» نام داشته و یکی از زمینه‌های فعّال در حوزه‌ی پردازش تصویر است. این پیشنهاده، به یکی از حالت‌های ارزیابی کیفیّت تصویر محاسباتی می‌پردازد.

There is no sample answer provided for this question.

Who is Linus Torvalds?

He is the creator of Linux kernel. He was a child when his grandfather (on the mother side) asked him to enter numerical inputs to his calculator. He then became interested with a fancier model which he found out that it was programmable. He learned about Unix and timesharing cababilities and tried to create his own. This ended up in the creation of Linux kernel and eventually a whole working operating system.

Why isn't the following dictionary-definition of *single in-line memory module* suitable for an average person?

> *A memory module that contains the chips needed to add 256K or 1M of random access memory to your computer. A SIMM plugs into a motherboard or logic board.*

Because if the average person knew the meanings of memory module', motherboard', or SIMM', they probably wouldn't have looked it up in a dictionary. (From the personal notes in the **Jargon**.)

Complete the following table of Baudy language symbols and their equivalents.

....?....	smile
;)	....?....
:D	....?....
....?....	crying

Complete the following table of abbreviations and their equivalents.

afk	....?.....
asap	....?.....
bak	....?....
brb	....?....

Why shouldn't you move your hard disk when your computer is on?
Because the read/write head may bump into the disk. (From the *park*'s entry in **Jargon**.)

Write how the math statement below is read in English:

$$y = \vec{f} \cdot \vec{w}^T + \vec{b}$$

What is a dataset?

A dataset is a set of ordered pairs, like (input, groundtruth), called samples. Samples are used to train/evaluate machine learning models which are desired to produce outputs as close to groundtruth as possible, when they are fed with the inputs.

Describe how the variable Y is changing in the indicated locations.