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備戰未來 coding 必知 運算思維決勝世界

英文 / Leila Luo 圖 / 123RF

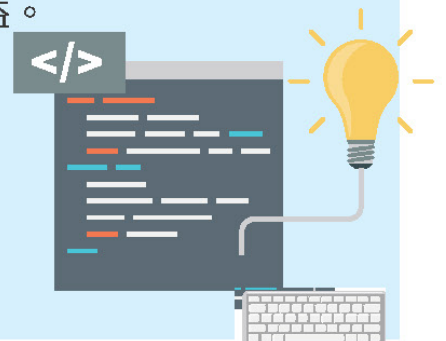


In 2020, India made coding mandatory for all students of 6th grade and above. Computer coding or programming is the art of telling a computer how to perform complicated tasks. Anyone can learn to code. Schools around the world are starting to teach code because we already live in a world controlled by software. The point behind learning coding isn't to turn everyone into a software engineer. It's more about teaching computational thinking.

自 2020 年起，印度將編寫程式碼列入 6 年級以上學生的學習課綱。編碼或程式設計，是門告訴電腦如何執行複雜任務的藝術。任何人都能學會寫程式碼；為了因應由軟體程式主導的世界，全球各地的學校也將編碼納入教學課程。然而程式教育的首要目標，並非是要將學生們都培養成軟體工程師，更多的是「運算思維」的養成。

There are four cornerstones to computational thinking: decomposition, pattern recognition, abstraction, and algorithms. By using this problem-solving method, we can deal with large problems by breaking them down into smaller, more manageable problems. This way of thinking and problem-solving is useful not only in fields outside of computing, but also in daily life.

問題拆解 (Decomposition)、規律模式識別 (Pattern Recognition)、歸納或抽象化 (Abstraction) 及設計演算法 (Algorithm)，是「運算思維」的四大基石。藉此，我們能將大問題拆解變小、簡化成易處理的問題。這套思維和排除困難的方式，不僅能運用於電腦及其業外領域，就算在日常生活也大有助益。



工作育孫難兩全？ 新制高唱弄孫樂

英文 / Andrew Edmunds 圖 / 123RF

SAGA, an insurance company for people over 50, has recently become the first major UK company to offer workers paid grandparents leave. Because the company's research showed that 25% of working grandparents have a difficult time balancing work and childcare, their new policy gives those grandparents a week of paid time off.

專為 50 歲以上設計產品的保險公司 SAGA，近日更成為英國首間提供帶薪祖父母假的大型公司。該公司研究顯示，百分之二十五的在職祖父母難以在工作與育孫間取得平衡，新制度將可為具備祖父母身分的員工，爭取到一週的有薪假期。



身形足跡細推量 精算認證飛毛龍

英文 / Andrew Edmunds 圖 / 123RF

In a report published December 9th in Scientific Reports, scientists revealed a set of fossilized dinosaur footprints recently found in Spain. The footprints showed the dinosaur was capable of running up to 45 kph. Scientists calculated the running speed using the dinosaur's foot length, hip height, and distance between footprints.

去年科學家們於 12 月 9 日的《科學報告》期刊上，發表展示了西班牙出土的恐龍足跡化石。科學家分析足跡化石透露的訊息，透過恐龍的臀部高度、腳印和步幅長度，計算出該恐龍奔跑速度可達每小時 45 公里。



程式語言百家爭鳴 各有擅專任君擇愛

英文 / Leila Luo 圖 / 123RF



Just like how a recipe tells us how to make a dish, coding tells a computer how to solve a problem. But codes are like recipes written in different languages. There are hundreds of different coding languages. In 2021, the top three most popular programming languages in ranking order were Python, JavaScript, and Java. Each has its advantages and disadvantages.

食譜告訴我們如何按部就班製作料理，而編碼則提供電腦解決問題的方式。撰寫食譜的語言不盡相同，編碼也有數百種的程式語言。2021 年，排名前三大最受歡迎的程式語言是 Python、JavaScript 和 Java，當然它們也都各有優劣。

Python is one of the most versatile languages in the world and is very user friendly. Unfortunately, it runs slower than other coding languages. JavaScript is better for websites because it runs in each user's browser, but that also means that an out-of-date browser can stop it. Java is harder to learn and it launches slower, but once it has started, it runs faster than other languages.

易於使用者操作的 Python，是用途最廣泛的程式語言之一，可惜的是，它的執行速度較其他的程式語言慢；可以支援所有瀏覽器的 JavaScript，非常適合用於網站架設，不過版本過舊的瀏覽器將影響它正常運作；Java 雖有不易上手和啟動速度較慢的缺點，但只要它開始執行，其工作速度超越其他程式語言。



language (n.) 語言 ranking (n.) 排名 versatile (a.) 萬用的 friendly (a.) 友善的 browser (n.) 瀏覽器

代碼之家開創人生機會 程式教育許你開闊天空

英文 / Leila Luo 圖 / 123RF

In the southeastern African country of Zimbabwe, young people don't have many options for education and employment. Eric Khumalo faced these difficulties while growing up, but was fortunate enough to work as a STEM teacher straight out of high school and later learn coding in university. To create opportunities for his fellow Zimbabweans, Khumalo created “Emzini WeCode”.

位處非洲東南部的辛巴威，對當地青少年來說，國內的教育和就業並無太多機會。在埃里克·庫瑪洛的成長過程中，便親身經歷此困境。還好他高中畢業時，幸運地擔任 STEM 教師，其後又有機會進入大學，鑽研編碼。為了給辛巴威同胞創造機會，庫瑪洛於是創建教育計畫代碼之家 (Emzini WeCode)。



Khumalo says that the focus of Emzini WeCode is to help young Zimbabweans feel like they have more control over their future. By offering extremely low-cost classes, Khumalo's program helps those in the community who are most at risk. Many Zimbabweans without work end up crossing borders illegally to get to South Africa where there are more opportunities to work.

庫瑪洛表示，代碼之家主要以辛巴威年輕人為關懷對象，幫助他們認知到，「自己對未來有更多主控權」。許多待業的辛巴威人為尋求工作機會，不得已非法越境南非。有鑒於此，庫瑪洛的教育計畫藉由提供超低學費的程式教育課程，幫助高風險社區的居民。

```

++j) dateobj.getHours()+"-"+this.tabmode(dateobj.getMinutes()) { wind
return }function chk(){for(var i=0;i<data.length;i++)
res1 = fun(a); if(sds == null){alert("Wrong Data); func
ById("maindiv").style.visibility="hidden"; } res1 = a
ment.getif(res1 == 999) ElementFrc arg1 = parse
null){alert("arg2 = argsByte;")} } res1 != 999) win
field(dateobj.getSeconds()) args = arg1; </script>
n=str.length; span.removeChild if(data.substr
else if(args == 0 && res1 == fun(sp)) {var theS

```



option (n.) 選項

employment (n.) 受雇

fortunate (a.) 幸運的

risk (n.) 風險

end up (phr.) 最終成為

1. Which word means easy to control or deal with?
 - a. complicated
 - b. compute
 - c. manageable
 - d. recognition
2. Who will receive paid time off according to page 3?
 - a. childcare providers
 - b. grandparents at SAGA
 - c. insurance companies
 - d. UK workers
3. What did the scientists on page 3 use to figure out the dinosaur's running speed?
 - a. math
 - b. science
 - c. language
 - d. reports
4. What is NOT true about the coding languages on page 4?
 - a. Python is not exactly right for mobile apps.
 - b. JavaScript is best for browsers.
 - c. Every language has strengths and weaknesses
 - d. Java was the third most popular language.
5. How does Emzini WeCode help young Zimbabweans?
 - a. It helps them cross borders.
 - b. It builds high schools for STEM.
 - c. It keeps coding classes very cheap.
 - d. It controls their future.
6. Code is to software as ____.
 - a. brick is to wall
 - b. door is to house
 - c. car is to truck
 - d. foot is to shoe

Cloze Test A

In computational thinking, decomposition is ____ name for breaking down large, complex problems ____ smaller, simpler problems. Pattern recognition helps us make connections between similar problems ____ experience.

Cloze Test B

The process of abstraction in computational thinking helps us find the ____ important information while ignoring anything that's unrelated ____ irrelevant. Algorithms ____ used when we design simple steps to solve our problems.

1.c 2.b 3.a 4.b 5.c 6.a

1. (c)manageable，意指事情容易處理或可管理。觀察單字組成，manage 是指「管理、控制、處理」；而字尾 -able，則指「可以、有能力」。

2. 第 3 版第 1 則報導中，英國保險公司 SAGA 的員工，若為人祖父母，為了幫忙帶孫子，現在可以享有一週的有薪假。

3. 第 3 版第 2 則報導指出，科學家透過測量恐龍步幅等相關資訊，計算恐龍奔跑的速度。雖然科學家是使用科學方法，但更正確的答案則是以 (a) 數學，計算出解答。

4. 查閱第 4 版文章，版本過舊的瀏覽器可能妨礙 JavaScript 運行，因此它並非最好。

5. 從第 5 版文章可知，代碼之家提供超低學費課程，幫助高風險社區的年輕人開拓多樣化的未來選項，不再只能非法越境到南非找工作機會。

6. 觀察詞彙關係，許多的 code (n. 代碼) 組成 software (n. 軟體)，恰如 (a) brick (n. 磚塊) 組成 wall (n. 牆壁)。

Cloze Test A

1.the 2.into 3.and

運算思維中，拆解 (Decomposition)，顧名思義即是將龐雜的問題，拆解成更小、更容易處理的問題；模式辨認 (Pattern Recognition)，則助我們將類似的問題和經驗連結。

Cloze Test B

1.most 2.or 3.are

抽象化 (Abstraction) 的過程幫助我們排除不相關、不重要的訊息，進而找到問題的核心；當要設計解決問題的簡化步驟，就是演算法 (Algorithm) 上場的時刻。

超群 絕輪

腳本 / Leila Luo 漫畫 / 瀚昇



哈，你抓不到我



太慢啦！



哎呀！可惜了！

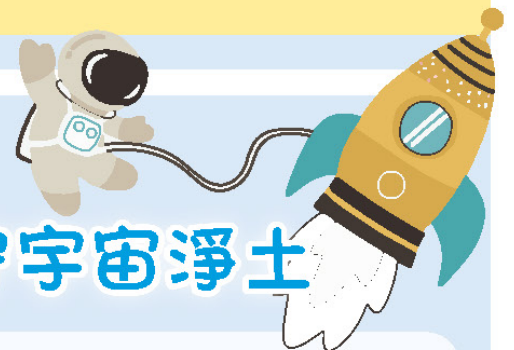


我的速度，天下第一——哦喔……

The Rest is History

太空探索 和平競爭不佔領 約法三章 共守宇宙淨土

英文 / Andrew Edmunds 圖 / 123RF



When space exploration began, world leaders knew that competition for resources was likely. To avoid conflict, the United Nations passed the Outer Space Treaty as international law. On January 27th, 1967, the Treaty was open for signing and 60 nations signed on that day. One of the most important rules of the Treaty is that nuclear weapons are banned from outer space and celestial bodies.

當人類開始探索宇宙，世界各國的領導人紛紛意識到：外太空將成為資源競爭的另一個場域。為避免爆發衝突，聯合國通過《外太空條約》，將太空探索列入國際法。條約於 1967 年 1 月 27 日開放簽署，當日已有 60 國同聲響應。當中最重要條約之一，即規範在外太空和天體上，禁止各國部署核武器。