CODECHEF-VIT NEWSLETTER

COMPETITIVE EDGE

FREQUENTLY ASKED QUESTIONS IN PYTHON

Q1. What do you know about palindromes? Can you implement one in Python?

```
>>> def isPalindrome(string):
left,right=0,len(string)-1
while right>=left:
if not string[left]==string[right]:
return False
left+=1;right-=1
return True
>>> isPalindrome('redrum murder')
```

Q2. What do you mean by *args and **kwargs?

In cases when we don't know how many arguments will be passed to a function, like when we want to pass a list or a tuple of values, we use *args.

```
>>> def func(*args):
for i in args:
print(i)
>>> func(3,2,1,4,7)
```

**kwargs takes keyword arguments when we don't know how many there will be.

```
>>> def func(**kwargs):
for i in kwargs:
print(i,kwargs[i])
>>> func(a=1,b=2,c=7)
```

Q3. What is a closure in Python?

A closure in python is said to occur when a nested function references a value in its enclosing scope. The whole point here is that it remembers the value.

```
>>> def A(x):
def B():
print(x)
return B
>>> A(7)()
```

Q4. Are these statements optimal? If not, optimize them.

No, these are not optimal
Help on wrapper_descriptor:
        __len__(self, /)
            return len(self).
        __len__ is a wrapper descriptor which in turn makes a call to len().
The optimal solution:
 word='word'

Q5. What will the following code output?
```
>>> a=1
>>> a,b=a+1,a+1
>>> a,b
```

The output is (2, 2). This code increments the value of a by 1 and assigns it to both a and b. This is because this is a simultaneous declaration. The following code gives us the same:
```
>>> a=1
>>> b,a=a+1,a+1
>>> a,b
```

London's full fibre broadband to be derived via tube channels.

Dhruv Shah
Core Committee member

Properties in London are set to benefit from a £10 million investment in full fibre broadband using Tube tunnels and public buildings to deliver gigabit speeds. Mayor of London Sadiq Khan announced the latest upgrade from copper cables to full fibre optics, in a bid to help the capital catch up with other cities across Europe.

Full fibre, which is fast enough to download a two-hour high definition movie in about 25 seconds, is only available to around 11% of properties in London at present. The plan will start with 118,000 premises in south London and hopes to tackle so-called 'not spot' areas where connectivity is particularly poor and the first section on track to go live from March 2020. The additional funding brings its total investment to more than £30 million, which will help more than 400,000 homes across London.

During the opening ceremony at The Speechmark, Mr. Khan was shown an interactive smart city model of London. The model, built by Vodafone in association with Bright Bricks brought to life how 5G deployment, partnered with the Internet of Things, will power new ways for cities to operate, especially in how they safeguard the health, safety, and well-being of citizens.

'London's future digital connectivity will be built on fibre,' Mr. Khan said. He added that this is the largest investment in connectivity City Hall has ever made and further added that the investment will cover the installation costs of linking fibre optic cables to public buildings, such as community centers and libraries, as well as reducing the cost to providers of laying cabling between the public buildings and Londoners' homes and businesses.

Did you Know ?

Amazon hasn't paid federal taxes in two years.
Amazon's profits nearly doubled from 2017 to 2018, but the company hasn't paid federal taxes in two years. This is completely legal. The US government allows companies certain tax breaks and deductions. One policy, called the R&D tax credit, encourages companies to spend its profits on research and development. From 2005 to 2014, Amazon received over $600 million in tax breaks to build warehouses in certain states. It received another $147 million in tax breaks for building data centers around the country.

Mitsubishi driver car concept monitors passenger wellbeing

Dipto Chakrabarty
Core Committee member

Mitsubishi has released a new concept of driverless cars concept; the company claims that the car will be able to detect the well-being of their passengers. Designing for driver wellness can also mean preventing vehicular accidents.

How are they achieving this?

The vehicles include infrared cameras inside the vehicle. The cameras will be able to detect changes in skin brightness which helps in measuring the heart rates of the drivers , along with that it also consists of face tracking function that can track the drivers facial features so for example the sensors will be able to detect the changes in the drivers eyes and eyelids under a variety of different lighting conditions .
The sensors will be able to react to driver fatigue a common cause of road accidents.
Based on the drivers health conditions the vehicle will be able to react by adjusting the lighting, air conditioning or calling emergency services .

The firm's executive officer for automotive equipment, Hiroshi Onishi said that such vehicles could help tackle "societal challenges"
-"For example, with the sensors, if it detects the driver is not paying attention or is not feeling well it can initiate an emergency or stop the car at the side of the road and call a doctor if necessary."

Future Plans

The Company plans to connect businesses at a destination for example airports and passengers could order food and other services to arrive or be delivered to them.
The vehicles include voice recognition technology to distinguish between different voices and handling all instructions.
It is believed that such vehicles would reach roads by about 2030 and move alongside traditional vehicles.

> "Every once in a while, a new technology, an old problem, and a big idea turn into an innovation."
>
> **Dean Kamen**

Pentagon hands Microsoft a ten billion dollars 'war cloud' deal called JEDI

Anurag Bharadwaj
Core Committee member

The Pentagon awarded Microsoft a $10 billion cloud computing contract, snubbing early front-runner Amazon, whose competitive bid drew criticism from President Donald Trump and its business rivals.

Bidding for the huge project, known as Joint Enterprise Defense Infrastructure, or JEDI, pitted leading tech titans Microsoft, Amazon, Oracle and IBM against one another.

The giant contract has attracted more attention than most, sparked by speculation early in the process that Amazon would be the sole winner of the deal. Tech giants Oracle and IBM pushed back with their own bids and also formally protested the bidding process last year.

Oracle later challenged the process in federal court, but lost.

Trump waded into the fray in July, saying that the administration would "take a very long look" at the process, saying he had heard complaints. Trump has frequently expressed his ire for Amazon and founder Jeff Bezos, who also owns the Washington Post. At the time, he said other companies told him that the contract "wasn't competitively bid."

Defense Secretary Mark Esper recused himself from the controversial bidding process earlier this week, citing a conflict of interest because his son works for one of the companies that originally bid.

The JEDI system will store and process vast amounts of classified data, allowing the U.S. military to use artificial intelligence to speed up its war planning and fighting capabilities.

A cloud strategy document unveiled by the Defense Department last year called for replacing the military's "disjointed and stove-piped information systems" with a commercial cloud service "that will empower the warfighter with data and is critical to maintaining our military's technological advantage."

Microsoft, Amazon, Google and other tech giants have faced criticism from their own employees about doing business with the government, especially on military and immigration related projects.

The Pentagon emphasized in an announcement that the process was fair and followed procurement guidelines. It noted that over the past two years, it has awarded more than $11 billion in ten separate cloud-computing contracts, and said the JEDI award "continues our strategy of a multi-vendor, multi-cloud environment."
The latter statement appeared designed to address previous criticism about awarding such a large deal to one company.

The deal is a major win for Microsoft's cloud business Azure, which has long been playing catch-up to Amazon's market leading Amazon Web Services. Microsoft said it was preparing a statement.

Amazon said Friday it was surprised by the decision.

"AWS is the clear leader in cloud computing, and a detailed assessment purely on the comparative offerings clearly lead to a different conclusion," Amazon spokesman Drew Herdener said in a statement. "We remain deeply committed to continuing to innovate for the new digital battlefield where security, efficiency, resiliency, and scalability of resources can be the difference between success and failure."

According to a July report from the research firm Gartner, Amazon holds almost 48% of the market for public cloud computing, followed by Microsoft in second place with close to 16%.

Over the last year, Microsoft has positioned itself as a friend to the U.S. military. President Brad Smith wrote last fall that Microsoft has long supplied technology to the military and would continue to do so, despite pushback from employees.

Oracle and IBM were eliminated earlier in the process, leaving Microsoft and Amazon to battle it out at the end.

Google decided last year not to compete for the contract, saying it would conflict with its AI ethics principles. Google employees have been especially vocal in protesting the company's involvement with government contracts.

"It's a paradigm changer for Microsoft to win JEDI," said Dan Ives, managing director of Wedbush Securities. "And it's a huge black eye for Amazon and Bezos."

Facebook launches a news section and will pay publishers

Rimjhim Singh
Core Committee member

Facebook has rolled out a special news tab, in a limited test in the U.S. as a home screen tab and bookmark in the main Facebook app.
Along with the traditional news feed, this tab will highlight selected articles depending on the user's preferences.
Facebook is said to be using human editors and algorithms to determine the stories for the users. There will be a section of Today's Stories which will show the biggest and breaking news of the day curated by a team of journalists whereas there will also be algorithmic suggestions based on the user's interests and activities.
This new section in the Facebook mobile app that will display headlines _ and nothing else _ from the Wall Street Journal, the Washington Post, BuzzFeed News, Business Insider, NBC, USA Today & the Los Angeles Times, among others. Local stories from several of the largest U.S. cities will also make the grade; headlines from smaller towns are on their way, Facebook says. Tapping on those headlines will take you directly to publisher websites or apps if you have any installed, which is more or less what publishers have been requesting from Facebook for years.
Facebook will reportedly pay for some of the content included in the tab although they declined to say who is getting paid and how much, saying only that it will be paying "a range of publishers for access to all of their content."