

Backward and Forward Compatibility

Introduction to Compatibility

Have you ever bought a new phone and found out that the charger for your old phone works with the new phone? Have you ever found the opposite, where you buy a different phone and you find that an old charger doesn't work with the new phone (even if the phone is from the same manufacturer)? This is an issue we call "compatibility", so if the manufacturer keeps the same charging port (socket) in different models of the phone, then the charger will work on all of them, but if they change the shape of the port (or the power requirements of the port), then the charger isn't compatible with the newer version.

Backward Compatibility

Backward Compatibility means that the current version of some technology works with older versions of that technology. Backward compatibility is also sometimes called *Downward Compatibility*. If an organisation changes a technology so that it is no longer compatible, they are said to be "breaking" backward compatibility. If we have a phone that we have downloaded apps onto and bought chargers and other technologies for it; if we get an upgrade to that phone and none of the apps work on it, and none of our technologies work on it, we would be much more likely to move onto a new brand of phone than if some (or all) of the existing technologies work with the new phone, so it's better for tech companies to ensure their technologies are backwards compatible. So, for example, when Sony released the PS2, it was backwards compatible with the PS1 and all of the PS1 games, and so anyone who bought the PS2 already had a load of games available for them to play.

The big challenge with backward compatibility is that it requires each new addition and innovation to any given technology to work in such a way that it doesn't counteract, or in any way impact, the existing features of the technology. This can sometimes lead to higher costs in developing systems, and it can curtail innovations.

Forward Compatibility

Forward Compatibility means that the current version of some technology is designed in such a way that it will work with future versions of that technology. Forward compatibility is also sometimes called *Upward Compatibility*. To make the system forward compatible, it doesn't mean that the designer has to predict each new future innovation and deal with it, instead if the older system is able to take in whatever inputs are necessary for that system, and ignore any other inputs (that may be used by newer versions), it will be compatible. In this scenario, the system may not be fully backward compatible, but is forward compatible.

Sometimes tech companies will deliberately ensure that a technology isn't forward compatible so that it will force all of their customers to purchase new versions of the technology and all of the related technologies. This can be seen as a way to drive sales.

Python

Python 2 is backwards compatible with Python 1, and Python 1 is forward compatible with Python 2. Python 3 is not backwards compatible with Python 2, and Python 2 is not forward compatible with Python 3.