

ASCII character sets

Computers use **character sets** to translate letters, numbers, and symbols into a format they understand. **ASCII**, or American Standard Code for Information Interchange, is a widely used character set that assigns **unique** numerical codes to English characters and symbols, enabling them to be displayed and processed by computers.

Using **standard** character sets allows computers to **understand** text created on other computers. This makes universal **communication** using computers possible.

Standard ASCII uses **7 bits** which gives 128 unique codes. **Extended ASCII** uses **8 bits** which gives 256 unique codes.

The ASCII codes for capital letters start at 65 (A) and go up by 1 until 90 (Z). There are then 6 punctuation characters from 91-96. Lower case letters starts at 97 (a) and increment sequentially until 122 (z)

In Python, the in-built `ord()` function takes a character and returns its ASCII code. Eg. `ord("A")` will give 65.

The built-in `chr()` function takes in the ASCII number and returns the keyboard character. Eg. `chr(65)` will return A.

Questions

1. What does ASCII stand for?

- (a) Advanced System for Character Information
- (b) American Standard Code for Information Interchange
- (c) Application-Specific Character Interface
- (d) Automatic Symbolic Code Identification

2. A standard character set like ASCII assigns unique numerical codes to:

- (a) Hardware components
- (b) Software applications
- (c) Text characters and symbols
- (d) Network protocols

3. Why are standard character sets important?

- (a) To improve internet browsing speed
- (b) To ensure consistent representation of characters across different systems
- (c) To store large amounts of data efficiently
- (d) To protect data from unauthorized access

4. Which Python function takes a character and returns its corresponding ASCII code?

- (a) `encode()`
- (b) `decode()`
- (c) `ord()`
- (d) `chr()`

5. Which Python function takes an ASCII code and returns the corresponding character?

- (a) encode()
- (b) decode()
- (c) ord()
- (d) chr()

6. Explain the difference between a character set and a single character.

7. Write a short Python code snippet that prints the ASCII code and character for a given character.

EXTENSION

Have a look at the way chr() and ord() are used in encrypting using the Caesar Cipher:

https://ccrcomputing.weebly.com/uploads/1/1/5/0/11505618/encryption_caesar_with_answers.pdf

ANSWERS

1. B
2. C
3. B
4. C
5. D
6. A character is one key on a keyboard. A character set is the set of unique numbers that are assigned to each keyboard character.

7.

```
1 char = input("Enter a character: ")
2 print("The ASCII code for " + char + " is " + str(ord(char)))
```