

Output

The `print` function is used to write output to the screen. `print` takes one or more arguments (strings or variables between the brackets) and writes the data to the screen.

E.g.

```
print("Hello World!")
print("Hello", name, "nice to meet you")
```

Variable Assignment

# Example 1 name = "Bob"	# Example 2 friendName = "Alice"
# Example 3 total = 20 + 50 + 35	# Example 4 area = 3.14 * r * r

Casting

Converting between data types

# Example 1 name = input("What is your name?")	# Example 2 age = int(input("What is your age?"))
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Random Numbers

When you want to generate a random number in your program you can make use of the `random` library.

```
# Example
from random import randint
myRandomNumber = random(1,6)
```

Selection

An `if` statement can be used to implement selection in Python. It is optionally followed by an `elif` and/or `else` statement.

```
# Example 1
if age >= 18:
    print("You can watch the film")
else:
    print("You can't watch the film")

# Example 2
if age >= 18:
    print("You can watch any film")
elif age >= 15:
    print("You can only watch films with a 15 rating or below")
elif age >= 12:
    print("You can only watch films with a 12 rating or below")
else:
    print("You can only watch PG or U rated films")

# Example 3
if len(password) < 8:
    print("Password is too short!")
```

Iteration

A `while` statement can be used to repeat a section of code until a condition becomes false.

```
# Example 1
correct = False
while not correct:
    password = input("Enter your password: ")
    if password == correctPw:
        correct = True
    print("Access granted")
else:
    print("Access denied: incorrect password")

# Example 2
sum = 0
done = False
while not done:
    price = int(input("Enter the price of the next item of shopping or 0 if you're done entering items: "))
    if price == 0:
        done = True
    else:
        sum += price
print("Your shopping comes to", sum)
```

The `FOR` loop is used when we want to do something an EXACT number of times.

```
# Example 1 - Iterating over a list
for item in myShoppingList:
    print(item)

# Example 2 - Using range to count to 10
for count in range(0, 11, 1):
    print(count)
```

Algorithm	A sequence of steps used by a human or computer to solve a problem or complete a task
Program	An algorithm expressed in a programming language
Programming language	A set of rules for instructing a computer to perform specific tasks
Interpreter	A program which translates high level language code to machine code and executes it
Program translation	One of the actions performed by an interpreter. Programming language code is converted into machine code that a computer can understand and execute
Program execution	One of the actions performed by an interpreter. Execution means doing the actions specified by the machine code
Programming environment	The tools a human uses to create programs
Input	Any method of getting data into the computer
Output	Any method of getting data out of the computer
Variable	A storage location with a name. The data in a variable can be changed after being initially set
Assignment	A statement in a programming language used to set or reset the data stored in a storage location identified by a variable name
Syntax error	An error that has occurred because the programmer has not followed the rules of the programming language they're using
Logical error	When a program does not behave in the way that it should, even though the programmer has followed the rules of the language
Arithmetic expression	A mathematical operation, for example, 10+5
Evaluate	In the context of programming, to evaluate an expression means to simplify it. For example, the arithmetic expression 10+5 evaluates to 15
String literal	A sequence of characters, for example "Hello world"
Sequence	One of the three basic programming constructs. Instructions that are carried one after the other in order.
Selection	One of the three basic programming constructs. Instructions that can evaluate a Boolean expression and branch off to one or more alternative paths.
Iteration	One of the three basic programming constructs. A selection of code that can be repeated either a set number of times (count-controlled) or a variable number of times based on the evaluation of a Boolean expression (condition-controlled).
Comparison operator	Used to compare two expressions
Library	Provides a set of subroutines that other programmers have already written which you can then use in your programs
Subroutine/function/procedure call	Specifying the point at which code in a subroutine is to be run
Importing	Specifying that you want to use a particular code library of subroutine contained within the library
Arguments	Data that you give to a subroutine to help it perform its task
Condition	A Boolean expression being used to make a decision
Increment	Increase a number by 1
Decrement	Decrease a number by 1
Type casting	Converting a value from one data type to another. For example, converting the string "10" to the integer 10.
Boolean	A data type which can take two possible values: true or false
Boolean expression	An algebraic expression which has a Boolean value

Entrepreneurs



Entrepreneurs are the people who start their own business. Usually they have the following characteristics:

- They are determined
- Willing to take a risk
- Creative and able to come up with new ideas
- They are confident

Entrepreneurs are often said to be “enterprising” which simply means they are able to spot a need for a product or service (a gap in the market). They then go on to implement that idea in the form of a new business or product.

Starting a business can be risky, but the rewards often outweigh these risks and can mean significant success for an entrepreneur.

Types of Business

The 7 Most Popular Types of Businesses



Sole Proprietorship

- Owned by one person
- No legal or financial distinction between business & business owner



Partnership

- Business, financial & legal responsibilities equally divided
- Must be registered for IRS purposes



Limited Partnership

- Ideal for those interested in raising capital from investors who aren't active in day-to-day duties

Anyone can set up a business and it can require very little paperwork to get going. However, there are many different types of business and which one you choose to start will depend on several factors.

Types of business we need to know about are:

- Sole trader
- Partnership
- Private limited company
- Public limited company

Each one has unique advantages and disadvantages. For example a sole trader gets to personally keep all the profits, however they also have the greatest risk if they do not pay their debts.

Marketing



The most important skill any entrepreneur can have is a mastery of marketing. Marketing is not just “selling a product.” It covers all aspects of the product from creation to cancellation.

Stages of the marketing lifecycle include:

- Market research
- Market segmentation
- Product design and development
- Launch
- Growth
- Maturity
- Decline/refresh

At each stage, a business must carefully monitor the progress of their product.

Motherboard



RAM



CPU



Hard Disc Drive (HDD)



Solid State Drive (SSD)



Graphics Card (GPU)



CPU Cooler



Case



Power Supply Unit (PSU)



Key Vocabulary and Definitions

Term	Meaning
CPU	Central Processing Unit - carries out all of the instructions required to make the computer operate
RAM	Temporary, low capacity, fast storage for data and programmes that are currently in use
HDD	Long-term, high capacity storage for data and programmes - slow to access
SSD	Solid State Drive - long-term, high capacity storage for data and programmes but uses no moving parts, so is faster, more durable and reliable
Optical Drive	Able to read optical media with a laser, such as CD, DVD or Blu-Ray
GPU	Graphic Processing Unit - performs all of the calculations and processes required to display 2d and 3d images on screen
Case	A shell that contains all of the hardware components of a computer
PSU	Power Supply Unit - supplies the required voltages of power for the different components inside the computer
Motherboard	A central component containing a number of pieces of hardware and provides a connection for all other components - houses the CPU and RAM
CPU Cooler	A metal "heatsink" and fan designed to draw and disperse heat away from the surface of the CPU
Core	A separate processing unit within the CPU, each core is able to carry out 1 instruction at once alongside each other
Clock Speed	The speed at which a core is able to carry out instructions, measured in GHz - the number of instructions per second
Cache	Super fast but small storage inside the CPU for frequently or regularly used instructions
Enigma Machine	A device used by Germans in the second world war to "encrypt" messages sent over radio waves using a code that changed daily
Colossus	The computer designed by Tommy Flowers to break the code used by Enigma, to decipher German messages
Difference Engine	An automated mechanical calculator created by Charles Babbage in the 1820s
COBOL	The first multi-purpose programming language, created by Dr Grace Hopper, allowing computers to be given instructions to complete many different tasks