

## Chat bots and programming Reading for Meaning

Name:

Class:

At the most basic level, a chatbot is a computer program that simulates and processes human conversation (either written or spoken), allowing humans to interact with digital devices as if they were communicating with a real person.

Chatbots can be as simple as basic programs that answer a simple question with a single-line response, or as sophisticated as digital assistants that learn and evolve to deliver increasing levels of personalization as they gather and process information.

You've probably interacted with a chatbot whether you know it or not. For example, you're at your computer researching a product, and a window pops up on your screen asking if you need help. Or you might have used voice commands to ask a virtual assistant like Siri or Alexa to play a song for you. These are all examples of scenarios in which you could be encountering a chatbot.

The most commonly used chatbots are single-purpose programs that focus on performing one function. They generate automated but conversational responses to user enquiries. Interactions with these chatbots are highly specific and structured and are often used in customer service.

These task-oriented chatbots can handle common questions, such as queries about hours of business or simple transactions that don't involve a variety of variables. The Hermes chatbot Holly is an example of a task-orientated chat bot.

Data-driven and predictive chatbots are often referred to as virtual assistants or digital assistants, and they are much more sophisticated, interactive, and personalized than task-oriented chatbots.

Digital assistants use data from the user to learn the user's preferences over time and provide recommendations. Apple's Siri and Amazon's Alexa are examples of consumer-oriented, data-driven, predictive chatbots.

You have previously learnt about the input-process-output model of all computing devices. All programs need to take in data, process it and then output it again. When planning an algorithm programmers use flowcharts to show how data will flow through a program. The flowchart shapes have special meanings to help us understand the algorithm. The algorithm is the step-by-step series of steps that the program will follow to get the intended output. Even sophisticated chatbots are only lines of code structured to process data.

A simple task-orientated chatbot will take in a question from a user. The user's question will be stored in a variable. This is the input stage and is shown using a parallelogram in a flowchart. The chatbot has a library of set questions that it can compare the input to. This is the processing stage. If it finds the question it will respond in the way it has been programmed. If it can't find an appropriate question, it will respond in a different way. This is the output stage.

In a flowchart branching steps are shown with diamond shapes with at least two arrows coming from it. This represents the different outputs the chatbot can give. The program structure being represented by the diamond is called selection. The keywords the programmer will use to program this step are if and else. If....else blocks are one of the basic programming structures.

Another key programming structure is a condition-controlled loop. Code inside a condition-controlled loop will run continuously until the condition set is met. For example, repeat until the zombie reaches the sunflower, forward, right. A chatbot will keep asking the same question until it gets an answer that it can understand which will lead it to ask a different question.