**Type #1:selective answer Question; 21 sample**

1. What is the microcontroller used in Arduino UNO?

|  |  |
| --- | --- |
| a) ATmega328p | b) ATmega2560 |
| c) ATmega32114 | d) AT91SAM3x8E |

Answer: a

Explanation: ATmega328p is a microcontroller which is 32KB of flash ROM and 8-bit microcontroller.

1. What does p refer to in ATmega328p?

|  |  |
| --- | --- |
| a) Production | b) Pico-Power |
| c) Power-Pico | d) Programmable on chip |

Answer: b

Explanation: Picopower technology employs advanced features like multiple clock domains, DMA and event systems to minimize power consumption.

1. Arduino shields are also called as

|  |  |
| --- | --- |
| a) Extra peripherals | b) Add on modules |
| c) Connectivity modules | d) Another Arduinos |

Answer: b

Explanation: The Arduino boards can connect with add- on modules termed as shields. Multiple, and possibly stacked shields may be individually addressable via an I2C serial bus.

1. What is the default bootloader of the Arduino UNO?

|  |  |
| --- | --- |
| a) Optiboot bootloader | b) AIR-boot |
| c) Bare box | d) GAG |

Answer: a

Explanation: The optiboot bootloader will take 512 bytes, leaving 32256 bytes for application code. Due to its small size larger up-loadable sketch size is achieved.

1. Which is the software or a programming language used for controlling of Arduino?

|  |  |
| --- | --- |
| a) Assembly Language | b) C Languages |
| c) JAVA | d) Any Language |

Answer: d

Explanation: A program for Arduino can be written in any programming language for a compiler that produces binary machine code for the target processor.

1. Do Arduino provides IDE Environment?

|  |  |
| --- | --- |
| a) True | b) False |

# Answer: a

Explanation: It includes a code editor with features as texti cutting and pasting, searching and replacing text, automatic indenting, brace matching, syntax highlighting, and provides simple one-click mechanism to compile and uplaod programs to an Arduino board.

1. A program written with the IDE for Arduino is called

|  |  |
| --- | --- |
| a) IDE source | b) Sketch |
| c) Cryptography | d) Source code |

# Answer: b

Explanation: Sketches are saved on the development computer as text files with the file extension .ino. Arduino software (IDE) pre-1.0 saved sketches with the extension file .pde.

1. Arduino IDE consists of 2 functions. What are they?

|  |  |
| --- | --- |
| a) Build() and loop() | b) Setup() and build() |
| c) Setup() and loop() | d) Loop() and build() and setup() |

# Answer: c

Explanation: Setup() is called once in the program when a sketch starts after power-up. It is used to initialixe variables, input and output pin modes, and other libraries needed in the sketch.

Loop() is used after setup() been called, function loop() is executed repeatedly in the main program. It controls the board until the board is powered off or is reset.

1. How many digital pins are there on the UNO board?

|  |  |
| --- | --- |
| a) 14 | b) 12 |
| c) 16 | d) 20 |

# Answer: a

Explanation: It has 14 digital pins input/output pins of which 6 can be used as PWM output, 6 analog inputs, a USB connection, a power jack, a reset button and more.

1. . board allows sewn into clothing.

|  |  |  |
| --- | --- | --- |
|  | a) UNO | b) RedBoard |
| c) LilyPad | d) Mega |

# Answer: c

Explanation: LilyPad was creatively designed with large connecting pads and a flat back to allow them to be sewn into clothing with conductive thread.

1. How many analog pins are used in Arduino Mega board?

|  |  |
| --- | --- |
| a) 16 | b) 14 |
| c) 12 | d) 8 |

# Answer: a

Explanation: It has lots of digital input/output pins, 14 can be used as PWM output 16 analog inputs, a USB connection, a power jack, and a reset button.

1. Which board is first to use microcontroller within build USB?

|  |  |
| --- | --- |
| a) LilyPad | b) UNO |
| c) RedBoard | d) Leonardo |

# Answer: d

Explanation: The Leonard is Arduino’s first development board to use one microcontroller with built-in USB. This means that it can be cheaper and simple, And also, code libraries are available which allow the board to emulate a computer keyboard etc.

1. . are pre built circuit boards that fit on top of Android.

|  |  |  |
| --- | --- | --- |
|  | a) Sensor | b) Data types |
| c) Breadboard | d) Sheilds |

# Answer: d

Explanation: Shields are pre- built circuit boards that fit on top of board and provide additional capabilities like controlling motors, connecting to internet, providing cellular etc

1. What does GPIO stand for?

|  |  |
| --- | --- |
| A. General Purpose Inner Outer Propeller | B. General Purpose Input Output Pins |
| C. General Purpose Interested Old People | D. General Purpose Input Output Processor |

# Answer: Option B

1. are pre built circuit boards that fit on top of Android.

|  |  |  |
| --- | --- | --- |
|  | A. Sensor | B. Data types |
| C. Breadboard | D. Sheilds |

**D**

1. What does IDE stand for?

|  |  |
| --- | --- |
| A. In Deep Environment | B. Integrated Development Environment |
| C. Internal Deep Escape | D. IDE |

Answer: Option B

1. Which board is first to use microcontroller with in build USB?

|  |  |
| --- | --- |
| A. LilyPad | B. UNO |
| C. RedBoard | D. Leonardo |

Answer: Option D

1. A program written with the IDE for Arduino is called

|  |  |
| --- | --- |
| A. IDE source | B. Sketch |
| C. Cryptography | D. Source code |

Answer: Option B

1. A function is a series of programming statements that can be called by name. Which command is called once when the program starts:

|  |  |
| --- | --- |
| A. loop() | B. setup() |
| C. (output) | D. (input) |

Answer: Option B

1. It starts with a /\* and continues until a \*/ What does this do?

|  |  |
| --- | --- |
| A. Loads a sketch | B. Makes comments |
| C. Compiles quicker | D. Makes stars appear |

Answer: Option B

1. What is wrong with the following

/\*Turns on an LED on for one second, then off for one second, repeatedly. This example code is in the public domain.\*/ int led = 13;

void setup() { pinMode(led, INPUT);

}

void loop() { digitalWrite(led, HIGH); delay(1000); digitalWrite(led, LOW); delay(1000);

}

|  |  |
| --- | --- |
| A. All the code | B. Void |
| C. High and Low | D. Low and High |

Answer: Option B

**Type #2: Explain the Terms and Definitions; 21 sample**

**#Question#1: What Is Arduino?** In your words....

# Answer :

Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. You can tell your board what to do by sending a set of instructions to the microcontroller on the board. To do so you use the Arduino programming language (based on Wiring), and the Arduino Software (IDE), based on Processing.

Over the years Arduino has been the brain of thousands of projects, from everyday objects to complex scientific instruments. A worldwide community of makers - students, hobbyists, artists, programmers, and professionals - has gathered around this open-source platform, their contributions have added up to an incredible amount of accessible knowledge that can be of great help to novices and experts alike.

Arduino was born at the Ivrea Interaction Design Institute as an easy tool for fast prototyping, aimed at students without a background in electronics and programming. As soon as it reached a wider community, the Arduino board started changing to adapt to new needs and challenges, differentiating its offer from simple 8-bit boards to products for IoT applications, wearable, 3D printing, and embedded environments. All Arduino boards are completely open- source, empowering users to build them independently and eventually adapt them to their particular needs. The software, too, is open-source, and it is growing through the contributions of users worldwide.

Arduino is an open source electronic platform. It is based on easy-to-use hardware and software. It able to read input signal. It is used to write and upload the computer code to the physical board by using Arduino.

Arduino基于易操作的硬件和软件，是一个开源电子平台。它可以获取多种形式的输入，如光传感器、指纹按钮、短信消息等，然后通过多种形式输出，如激活电机、打开LED灯或在线发送消息。我们可以通过arduino板上的微型控制器发布指令，这里需要结合Arduino编程语言和Arduino IDE，将程序烧录好上传到硬件板上。

Arduino由Ivrea交互设计学院开发，面向的是没有电子和编程基础的学生。并且Arduino一直在不断地更新以适应人们的各种需求变化。所以Arduino都作为多种项目或工具的核心，小到日常用品，大到复杂的科学研究设备。受众范围很广，各行各业的专业与非专业人士都可以是它的用户。

# #Question#2: Why we should use Arduino?

**Answer :**

Arduino has been used in thousands of different projects and applications. The Arduino software is easy-to use for beginners, yet flexible enough for advanced users. It runs on Mac, Windows, and Linux. Teachers and students use it to build low cost scientific instruments, to prove chemistry and physics principles, or to get started with programming and robotics. Designers and architects build interactive prototypes, musicians and artists use it for installations and to experiment with new musical instruments. Makers, of course, use it to build many of the projects exhibited at the Maker Faire, for example. Arduino is a key tool to learn new things. Anyone - children, hobbyists, artists, programmers - can start tinkering just following the step by step instructions of a kit, or sharing ideas online with other members of the Arduino community.There are many other microcontrollers and microcontroller platforms available for physical computing. Parallax Basic Stamp, Netmedia's BX-24, Phidgets, MIT's Handyboard, and many others offer similar functionality. All of these tools take the messy details of microcontroller programming and wrap it up in an easy-to-use package. Arduino also simplifies the process of working with microcontrollers, but it offers some advantage for teachers, students, and interested amateurs over other systems:

* + Inexpensive - Arduino boards are relatively inexpensive compared to other microcontroller platforms. The least expensive version of the Arduino module can be assembled by hand, and even the pre-assembled Arduino modules cost less than $50
  + Cross-platform - The Arduino Software (IDE) runs on Windows, Macintosh OSX, and Linux operating systems. Most microcontroller systems are limited to Windows.
  + Simple, clear programming environment - The Arduino Software (IDE) is easy-to-use for beginners, yet flexible enough for advanced users to take advantage of as well. For teachers, it's conveniently based on the Processing programming environment, so students learning to program in that environment will be familiar with how the Arduino IDE works.
  + Open source and extensible software - The Arduino software is published as open source tools, available for extension by experienced programmers. The language can be expanded through C++ libraries, and people wanting to understand the technical details can make the leap from Arduino to the AVR C programming language on which it's based. Similarly, you can add AVR-C code directly into your Arduino programs if you want to.
  + Open source and extensible hardware - The plans of the Arduino boards are published under a Creative Commons license, so experienced circuit designers can make their own version of the module, extending it and improving it. Even relatively inexperienced users can build the breadboard version of the module in order to understand how it works and save money.

We should use Arduino because of its features:

* It is easy to use.
* It runs on Cross platform.
* Low cost
* It is open source.

Arduino已经应用在数千中不同的项目和应用中。Arduino软件对于初学者来说很好上手，但是对于高级用户来说足够灵活。它可以在Mac、Windows和Linux上运行。教师和学生用它来建造低成本的科学仪器，证明化学和物理原理，或者开始编程和机器人技术。设计师和建筑师建造交互式原型，音乐家和艺术家用它来安装和试验新的乐器。当然，创客们用它来建造许多在创客博览会上展出的项目。Arduino是学习新事物的关键工具。任何人——儿童、业余爱好者、艺术家、程序员——都可以按照工具包的一步一步的指导进行修补，或者与Arduino的其他成员在线分享想法社区。那里是否有许多其他微控制器和微控制器平台可用于物理计算。视差基本邮票，Netmedia的BX-24，Phidgets，麻省理工学院的Handyboard，以及其他许多类似的功能。

便宜-与其他微控制器平台相比，Arduino板相对便宜。最便宜的Arduino模块可以手工组装，甚至预装配的Arduino模块也不到50美元

跨平台——Arduino软件（IDE）运行在Windows、Macintosh OSX和Linux操作系统上。大多数微控制器系统仅限于Windows。

简单、清晰的编程环境——Arduino软件（IDE）对于初学者来说很容易使用，但对于高级用户来说也足够灵活。对于教师来说，它很方便地基于处理编程环境，因此在该环境下学习编程的学生将熟悉Arduino IDE的工作原理。

开源和可扩展软件——Arduino软件作为开源工具发布，可由经验丰富的程序员进行扩展。语言可以通过C++库扩展，想要了解技术细节的人可以从ARDUNO到基于它的AVR C编程语言的跳跃。类似地，如果愿意，可以直接将AVR-C代码添加到Arduino程序中。

开源和可扩展硬件——Arduino电路板的计划是在Creative Commons许可下发布的，因此经验丰富的电路设计师可以制作自己的模块版本，对其进行扩展和改进。即使是相对缺乏经验的用户也可以构建该模块的试验板版本，以了解其工作原理并节省资金。

我们应该使用Arduino，因为它具有以下特点：

易于使用。

跨平台运行。

低成本

它是开源的。

# #Question#3: What Do You Mean By Open-source Hardware? Answer :

Open-source hardware shares much of the principles and approach of free and open-source software. In particular, we believe that people should be able to study our hardware to understand how it works, make changes to it, and share those changes. To facilitate this, we release all of the original design files (Eagle CAD) for the Arduino hardware. These files are licensed under a Creative Commons Attribution Share- Alike license, which allows for both personal and commercial derivative works, as long as they credit Arduino and release their designs under the same license. The Arduino software is also open-source. The source code for the Java environment is released under the GPL and the C/C++ microcontroller libraries are under the LGPL.

开源硬件与自由开源软件的许多原理和方法相同。人们可以研究硬件，了解它是如何工作的，对它进行更改，并共享这些更改。为了便于实现这一点，我们发布了Arduino硬件的所有原始设计文件（Eagle CAD）。这些文件是在一个CreativeCommons属性共享相似许可证下授权的，该许可证允许个人和商业衍生作品，只要他们在同一个许可证下授予Arduino并发布他们的设计。Arduino软件也是开源的。java环境下的源代码在GPL下发布，C/C++微控制器库在LGPL下。

# #Question#4: Can we Program The Arduino Board In C? Answer :

In fact, you already are; the Arduino language is merely a set of C/C++ functions that can be called from your code. Your sketch undergoes minor changes (e.g. automatic generation of function prototypes) and then is passed directly to a C/C++ compiler (avr-g++). All standard C and C++ constructs supported by avr-g++ should work in Arduino.

事实上，我们已经是用C编写的程序了。ARDUNO语言只是一套可以从你的代码中调用的C/C++函数集。你的程序经历了一些小的变化（例如函数原型的自动生成），然后直接传递给C/C++编译器（AVR G++）。AVR G++支持的所有标准C和C++结构都应该在ARDUIO中工作。

# #Question#5: Can we Use A Different Ide To Program The Arduino Board? Answer :

It is possible to compile programs for the Arduino using other build tools (e.g. Makefiles and/or AVR Studio). You'll need to configure these to link against the appropriate files in the Arduino core libraries.

可以使用其他构建工具（例如Makefiles和/或avrstudio）为Arduino编译程序。您需要将这些配置为链接到Arduino核心库中的适当文件。

# #Question#6:

1. **Can we Use An Arduino Board Without The Arduino Software?**
2. **can we Program An Arduino Board Without The Arduino Ide?**
3. **Can we Use The Arduino Software With Other Avr Boards? Answer :**
4. Sure. It's just an AVR development board, you can use straight AVR C or C++ (with avr-gcc and avrdude or AVR Studio) to program it. 可以使用直AVR C或C++（与AVR GCC和AVRDUD或AVR Studio）编程
5. Yes, you can use Create web editor to program your board without the need of download the classic IDE. 可以安装Arduino Create插件，通过用在线编辑器编写程序
6. Yes, although it may require some modifications to the Arduino core libraries. 只需要对核心库进行一些修改

# #Question#7:The Arduino Ide Has Been Showing “uploading Sketch...” For A Long Time. Why Hasn’t It Finished Uploading?

**Answer :**

Occasionally the uploading process gets hung up. Click the Upload button again and it will restart the upload process. Uploading the sketch shouldn’t take more than 10 seconds.

有时上传过程会被挂起。再次单击上传按钮，它将重新启动上传过程。上传程序不会超过10秒。

# #Question#8: What Are The Different File Extensions For? Answer :

While creating a sketch in the Arduino IDE, you have access to a number of different file extensions for use with your source code files. Each one has its own particular use which I'll explain below.

**.ino :** This is the main extension for your sketch file(s). Your primary sketch file must be an .ino file named the same as the directory it is located in. You can create additional .ino files in your sketch named however you like. Before compilation, all additional .ino files are appended to the primary sketch file. They are copied in ascending order based on the file name, and all are run throguh the standard process of gathering includes and generating prototypes. For more information on what the IDE does beofre compiling your code, visit this FAQ: What does the IDE change in my sketch?

**.pde :** This is the default extension for sketches written for the Arduino IDE prior to the release of version

1.0. if you use an IDE version of at least 1.0.0 or greater, you should rename your sketch file from .pde to

.ino. Also keep your IDE up to date, pre 1.0 versions do not support many new libraries due to significant changes to the Arduino core API.

**.h :** Header files, or files with the extension .h can be utilized in a number of ways. If your sketch uses a set of constants that multiple .cpp or .ino files may use, you can create a single location for your common variables. Functions that are defined in different .cpp files can have their declarations placed in a header for easy reuse.

**.cpp :** This extension is a C++ source file. Sometimes a sketch becomes quite large and you can utilize a

.cpp file to separate sections of your code. Definitions inside a .cpp file that you want to access elsewhere should have their declarations inside a header (.h) file. This allows your sketch to include the header, and its functionality. Also an important point is; your .cpp files do not go through the IDE pre-compilation modifications, and therefore have no prototypes generated. For more information on using multiple files, visit this article: Breaking a sketch into multiple files.

**.c :** If you wish to write C code and use it within Arduino, you need to use a .c extension instead of a .cpp file. Using a .c file alone however is not the complete solution.

你可以在IDE中创建一个具有不同扩展名的源代码。每一个都有它自己的特殊用途，我将在下面解释。

.ino:这是程序文件的主扩展名。主程序文件必须是一个.ino文件，其名称与它所在的目录相同。可以在程序中创建附加的.ino文件，名称自定。在编译之前，所有附加的.ino文件都会附加到主程序文件中。它们是根据文件名按升序复制的，所有这些都是通过收集包含和生成原型的标准过程运行的。

.pde：这是在版本1.0发布之前为Arduino IDE编写的程序的默认扩展.如果使用的IDE版本至少为1.0.0或更高版本，则应将草图文件从.pde重命名为.ino

还要保持您的IDE是最新的，1.0之前的版本不支持许多新的库，因为Arduino核心API发生了重大变化。

.h：头文件或扩展名为.h的文件可以通过多种方式使用。如果程序使用多个.cpp或.ino文件可能使用的一组常量，则可以为公共变量创建一个单独的位置。在不同的.cpp文件中定义的函数可以将它们的声明放在头中以便于重用。

CPP：这个扩展是C++源文件。有时程序变得相当大，您可以利用.cpp文件来分隔代码的各个部分。要在其他地方访问的.cpp文件中的定义应该在头（.h）文件中声明。这允许草图包含标题及其功能。还有一点很重要：.cpp文件没有经过IDE预编译修改，因此没有生成原型。

.c：如果您希望编写c代码并在Arduino中使用它，则需要使用.c扩展名而不是.cpp文件。但是，单独使用.c文件并不是完整的解决方案。

# #Question#9:

1. **Is There Another Ide For Arduino?**
2. **Can we Use Alternative Serial Monitors With Arduino? Answer :**

There are a few different solutions you can use, there are plugins and modifications for mainstream IDE packages. And a few talented people have created standalone applications specifically for Arduino and AVR development.

There are following IDE toolbar of Arduino:

1. It is used to check if there is any compilation error.
2. It is used to upload a program to the Arduino board. C Shortcut used to create a new sketch.

D It is used to directly open one of the example sketch. E It is used to save your sketch.

F Serial monitor used to receive serial data from the board and send the serial data to the board.

有一些不同的解决方案可以使用，有插件和对主流IDE包的修改。一些人专门为Arduino和AVR开发创建了独立的应用程序。

Arduino有以下IDE工具栏：

用于检查是否有编译错误。

它用于将程序上传到Arduino板。

用于创建新程序的快捷方式。

它用于直接打开其中一个示例程序。

它用于保存程序。

串行监视器用于接收来自板的串行数据并将串行数据发送到硬件板上。

# Answer :

Yes, alternative serial monitors can be used. The arduino connects with the computer using a virtual serial port over USB. This means any application on your computer can potentially connect with the Arduino. Not to mention the fact you can write your own programs which can talk to your project using the serial port.

I have personally used HTERM and it met all my needs. Many people have used the other listed applications with positive results.

可以，可以使用替代串行监视器。arduino通过USB使用虚拟串行端口与计算机连接。这意味着计算机上的任何应用程序都可以与Arduino连接。当然可以编写自己的程序，用串行端口与程序连接。

# #Question#10: What Does The Ide Change In My Sketch? Answer :

The IDE makes subtle changes to the code when you compile your sketch. The changes are not permenant as a copy of your sketch is used to do the compiling. This is a consequence of the IDE allowing you to compile the sketch without saving into a file, which is what the compiler requires.

In a breif rundown, the IDE does three major activities.

Adds an include file for the Arduino core: This process is a fairly harmless addition, if users include Arduino.h explicitly, the header has #ifndef guards protecting it from multiple declaration errors which is typical when including an unprotected header into multiple locations.

Generates function prototypes: This is also a generally unobtrusive step. As with protected include files, you can have multiple declarations of a function, it is the definitions which must be unique.

Collects included libraries: As the sketch is compiled in a temporary location, the IDE needs to ensure all include paths are valid. To accomplish this the IDE scans the sketch for all headers that match files residing in the libraries folder, then it simply copies the library source files into the temporary location along with the sketch.

This has been a source of error for many new Arduino users attempting to write their own libraries. As confusing as it sounds, any library included into other libraries must also be included in the sketch; simply so it can be copied to the temporary location.

To show a quick example of what the modifications look like; here is the Bare Minimum sketch, and its modified result.

Before---expand source, After expand source

The modifications performed are great for beginners that do not know the C++ fundamentals required for building simple sketchs. The sketch looks tidier to the novice with only a setup()/loop() implementation cluttering up the workspace. However once you start using certain C++ features you can run into some common pitfalls as a result of these modifications.

当我们编写程序时，IDE会对代码进行细微的更改。这些改动不是永久性的，因为你的代码是用来编译的。这是IDE允许我们编译代码而不必保存到文件中的结果，而这正是编译器所需要的。

简而言之，IDE做了三个主要的变动。

为Arduino核心添加一个include文件：这个过程是一个相当无害的添加，如果用户显式地包含Arduino.h，则头具有#ifndef保护，以防止出现多个声明错误，这在将未受保护的头包含到多个位置时很常见。

生成函数原型：这也是一个通常不引人注目的步骤。与受保护的include文件一样，一个函数可以有多个声明，定义必须是唯一的。

收集包含的库：由于代码是在临时位置编译的，IDE需要确保所有包含路径都有效。为了实现这一点，IDE扫代码以查找与libraries文件夹中的文件匹配的所有头文件，然后简单地将库源文件与代码一起复制到临时位置。

这是许多新的Arduino用户试图编写自己的库的一个错误原因。尽管听起来很混乱，但包含在其他库中的任何库也必须包含在代码中；这样就可以将其复制到临时位置。

为了展示修改的快速示例，这里是最小草图及其修改结果。

前---扩展源，后扩展源

对初学者来说，修改的结果对于不知道构建简单代码所需的C++基础来说是非常有用的。对于初学者来说，这个代码看起来更整洁，只有setup（）和loop（）。但是，一旦开始使用某些C++特性，这些修改就会导致一些常见的缺陷。

# #Question#11: What Is The Arduino Language? Answer :

There is no custom Arduino language, Arduino is the name of the project here: Arduino.cc.

The compiler used by the IDE is called avr-gcc and it is a C++ compiler. The languages listed below are compatible with avr-gcc and can be used to program your sketches in the IDE.C,C++,Inline ASM The IDE has access to a large API for use with your Arduino development boards. The source code is freely available for you to extract and modify as you wish. The API also sits on top of a robust and industry standard framework for manipulating the CPU directly. So when you need more performance from your device you can leave parts of the Arduino API out directly control the hardware. An example is port manipulation over Arduinos digitalRead/Write functionality.

没有自定义的Arduino语言，Arduino是项目Arduino.cc的名字。IDE使用的编译器称为AVR GCC，它是C++编译器。C，C++,Inline ASM这些语言与AVR GCC兼容，可以用在IDE的程序上。IDE可以访问一个大型API，用于Arduino开发板。源代码可供您随意提取和修改。该API还位于一个强大的行业标准框架之上，用于直接操作CPU。因此，当我们需要提高设备的性能时，可以不使用Arduino API的一部分直接控制硬件。例如，通过Arduinos数字读/写功能进行端口操作。

# #Question#12: Why Is The Arduino Chip Running At 16mhz When It Can Run At 20mhz?

**Answer :**

The reason is that the first Arduino used the Atmega8 which could not run faster than 16Mhz. As the chip has been upgraded they wanted to make the boards speed compatible. Arduino is also not really intended for fast- processing (its only 8-bit anyways) so the chips are running at 16MHz.

原因是第一版Arduino使用的Atmega8运行频率最快为16Mhz。随着芯片的升级，人们想使电路板的速度可以兼容。Arduino也不是真的打算用于快速处理（无论如何它只有8位），所以芯片的运行频率是16MHz。

# #Question#13: Who Are Using Arduino? Answer :

Arduino is used by students coming from almost every discipline at university level. Art and design students were our initial user group from, but by making the system easy to use to them, we made it easy for everybody. Many design studios, but also research groups, started using Arduino technology for its ease of use, as it makes things that should be easy to solve, easy to solve. Since Christmas 2011, Arduino is also sold at retail stores (e.g. at Swedish Kjell & Co) . Who knows how many electronics aficionados there are making projects in their spare time.

Arduino被大学里几乎所有学科的学生所使用。艺术和设计专业的学生是我们最初的用户群，但是通过使系统对他们易于使用，我们使每个人都很容易使用。许多设计工作室，也包括研究小组，开始使用Arduino技术，以便于使用，因为它使事情变得容易解决。自2011年圣诞节以来，Arduino也在零售店销售。

# #Question#14: What are the advantages of Arduino? Answer :

There are following features of Arduino:

* It able to read analog or digital input signals. 可以读入模拟信号或数字信号
* We can control our functions. 自己控制它的功能
* It uses c and c++ programming language. 使用C或C++语言

# #Question#15:

1. **What is sketch in Arduino?**
2. **What are the three important parts of Arduino?**
3. **What are the software structure functions?**
4. **What are the functions of time in Arduino?**
5. **What are Libraries in Arduino? Answer :**
6. In Arduino, the first terminology is the program called sketch. 程序
7. Arduino has three important parts: structure , values( variables and constants) and function. 结构、值（变量和常量）和函数。
8. There are two main software structure functions:Setup( ) function,Loop( ) function d)In Arduino, there are four functions of time:delay() , delayMicroseconds(),millis() micros()

e)In Arduino, Libraries are collection of code that makes it easy to connect to a sensor, display, module etc.库是代码的集合，可以方便连接到传感器、显示器、模块等。

# #Question#16:In the following statement, what does the 1000 stand for: delay(1000);

# Answer: 使程序暂停100ms(1s)

# #Question#17:What is the maximum amount of current for any one of the Arduino pins?

# Answer: 20mA

# #Question#18:When does the void setup() part of the program occur?

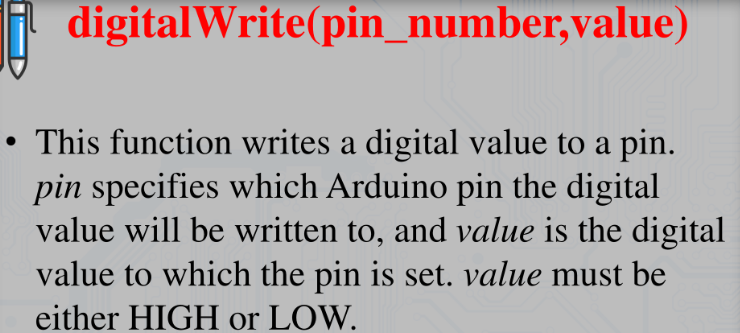
# 在程序刚执行的时候发生，只执行一次，起到初始化程序的作用，分配输入输出端口等。

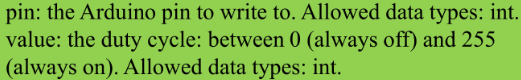
# #Question#19:What is the difference between digitalWrite() and analogWrite() ???

**Answer**:

digitalWrite表示将数字信号写到数字引脚，写入的值只有HIGH(1)和LOW(0)，该信号是离散的

analogWrite表示将模拟信号写到模拟引脚，写入的值是在(0, 255)范围内的，该信号是连续的





# 参考：<https://arduino.stackovernet.com/cn/q/10941>

# #Question#20:What does this function do: Serial.begin(9600);

# Answer:设置串口的波特率，波特率是指每秒传输的比特数，除以8可得到每秒传输的字节数。

**#Question#21:What is the for() statement used for?**

**Answer:**

for循环执行语句预定的次数。循环的控制表达式在for循环括号内完全的初始化，测试和操作。它很容易调试循环结构的行为，因为它是独立于循环内的活动。

每个for循环最多有三个表达式决定其操作。以下示例显示了通用的for循环语法。请注意，在for循环参数括号中的三个表达式用分号分隔。

for ( initialize; control; increment or decrement) {

// statement block

}

**Type #3: Code section ;15 sample**

1. Write the code and draw the circuit pin connection Turn on/off the 8 Led connected first even pin then odd pin
2. Write the code and draw the circuit pin connection Turn on/off the 8 Led connected first odd pin then even pin
3. Write the code and draw the circuit pin connection Turn on/off the 8 Led connected first four pin then second four pin
4. Write the code and draw the circuit pin connection Read the analog value (A0 and A1) and print the value on serial port with 9600 baud rate
5. Write the code and draw the circuit pin connection, Read the analog value(A0) and print the value on serial port with 9600 baud rate.
6. Write the code and draw the circuit pin connection Read the analog value(A0 and A1 and A2) and print the value on serial port with 9600 baud rate
7. write the code to make the pwm pulseFrom 20 to 60%
8. write the code to make the PWM pulse From 10 to 50%
9. write the code to make the pwm pulseFrom 0 to 100%
10. write the code to write the name “JXUST” On 16\*2 LCD
11. write the code to write the name “JXUST\_2020” On 16\*2 LCD
12. write the code to write the name “JXUST\*\*” On 16\*2 LCD
13. write the code to print the name “JXUST china” in one line and write counting the time number with this format “ Time:“ on the second line On serial port with 9600 baud rate
14. write the code to write the name “JXUST\_2020” ” in one line and write counting the time number with this format “ Time:“ on the second line On serial port with 9600 baud rate
15. write the code to write the name “JXUST\*\*” ” in one line and write counting the time number with this format “ Time:“ on the second line On serial port with 9600 baud rate