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| IOVIA | SOFTWARE  CHALLENGE | Q# Programming  (via) Jupyter |
|  | | Related image  /var/folders/k9/cv9f3x4s4lx3vtn5wbdg8b6h0000gn/T/com.microsoft.Word/Content.MSO/9E28C58D.tmp |
| CONTENTS  PG. 2  Installation Procedure of Q#, Jupyter Notebook, .Net SDK on MacOS  PG. 3  Getting Started with Q# Program  PG. 4  Compilation of Q# Program | | Prepared By:  Gavaskar |

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|  | IOVIO Q# CHALLENGE OS : MacOS Mojave (64 bit)  Jupyter Installation:  JupyterLab installed using ***conda***  Step : 1  Make sure conda installed on your system in order to install  Jupyteter. If not, please follow the step.  <https://www.anaconda.com/distribution/>  1.Download Python 3.7 and intall  2. Anaconda Double-click the .pkg file.  3. Follow the prompts on the installer screens  Note : If you are unsure about any setting, accept the defaults. You can change them later  4. To verify the successful installation run the command on terminal conda list  Step:2 Installation of Jupyter  1.Upon successful installation of Conda, run the below mentioned command on Terminal the Jupyter lab will install on your pc  conda install -c conda-forge jupyterlab  3. Jupyter lab requires Jupyter notebook, please make sure installed already by running the command on Terminal  jupyter notebook –version  if notebook is not installed, please install by running this command  jupyter notebook  Step: 3 Installation of **Quantum Development Kit**  Installing IQ#  IQ# (pronounced i-q-sharp) provides the core functionality of compiling and simulating Q# operations for Jupyter and Python. Installing IQ# on your machine typically takes less than 10 minutes; just follow these two steps:   1. Install the latest version of the [.NET Core SDK](https://dotnet.microsoft.com/) (2.2 or later) 2. following the instructions from the [.NET downloads page](https://www.microsoft.com/net/download). 3. 3. From the command line, execute   dotnet tool install -g Microsoft.Quantum.IQSharp   1. 4.IQ# was correctly installed, from the command line type:   dotnet iqsharp --version.  Run and Compile Q#   1. Launch the Jupyter notebook by executing below command from Terminal (jupyter notebook) 2. Dashboard will open on default browser 3. Filess>> New >> Select Q# Program 4. <http://localhost:8888/>      1. Declaring variable HelloQ   operation HelloQ(name: String) : Unit {  Message($"Hello {name}!");  }  Once added the message ( Press: cmd +Enter   1. Defining variable HelloQ = Gavaskar   operation HelloGavaskar() : Unit {  HelloQ("Gavaskar");  }  A screenshot of a cell phone  Description automatically generated  8.Performing Mathematical function by importing Microsoft math library.  open Microsoft.Quantum.Math;  operation HelloPi() : Unit {  let pi = Microsoft.Quantum.Convert.DoubleAsString(PI());  HelloQ(pi);  }   1. Simulating the value of Pi (22/7)   %simulate HelloPi    Opening the compiled Program:   1. Follow step 1 to 3 intall the Jupyter 2. Open the attached Program in Jupyter notebook 3. Run   Code is available in below mentioned location in Github  <https://github.com/gavaschem/Quantum> |
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