Practical - 9

Name: Shivam Tawari
Roll no: A-58
Subject: Cloud Computing

Aim: Open end: Explore cloud based machine learning using Microsoft Azure cloud (Microsoft Machine Learning Studio)

Theory:

Azure Machine Learning Studio:
Azure Machine Learning Studio is web-based integrated development environment (IDE) for developing data experiments. It is closing knit with the rest of Azure's cloud services and that simplifies development and deployment and deployment of machine learning models and services.

Azure Machine learning is a cloud service for accelerating and managing the machine learning project project lifecycle.

You can create in Azure Machine Learing or use a model built from an open-source platform, such as PyTorch, Tensorflow, or Scikit-learn. MLOps tools help you monitor, retrain, and redeploy models.

Data Scientists and ML engineers will find tools to accelerate and automate their day-to-day workflows. Application developers will find tools for integrating models into applications or services.

Conclusion: Hence, we have successfully implemented exploring cloud based machine learning using Microsoft Machine learning Studio.

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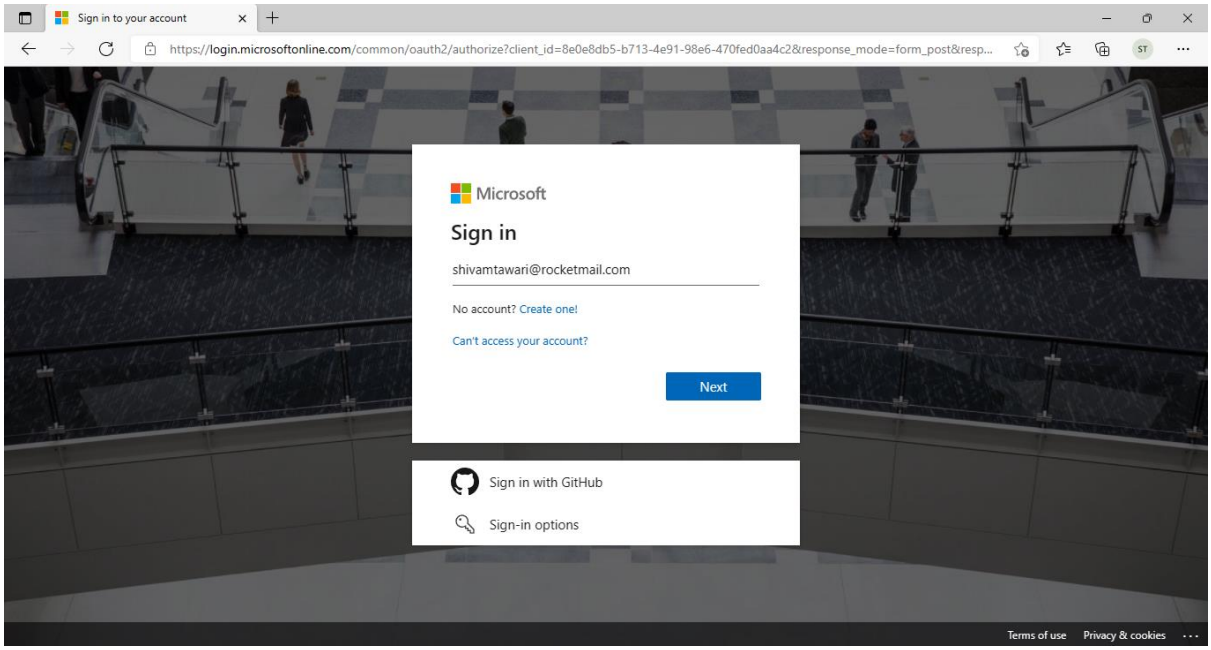

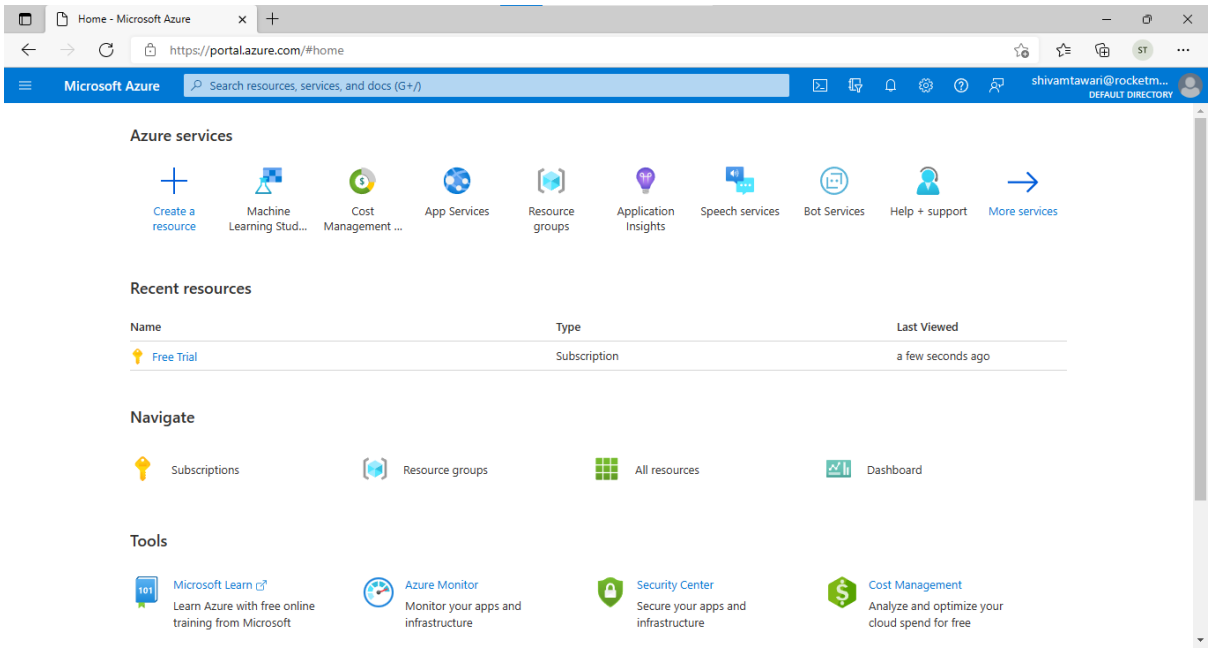

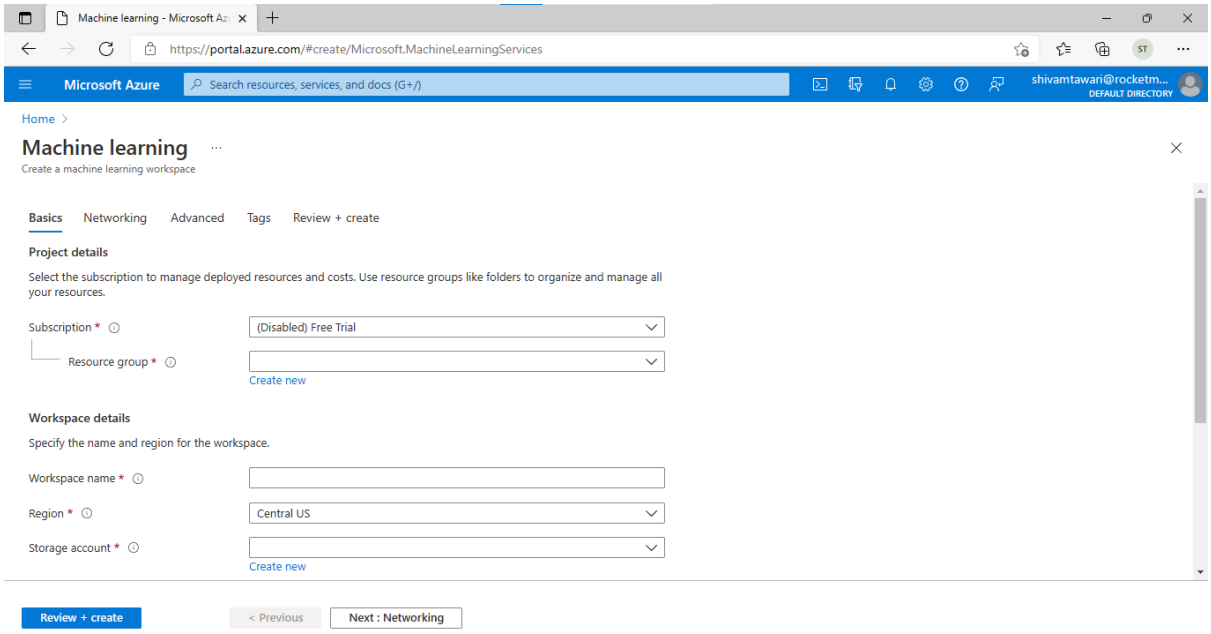
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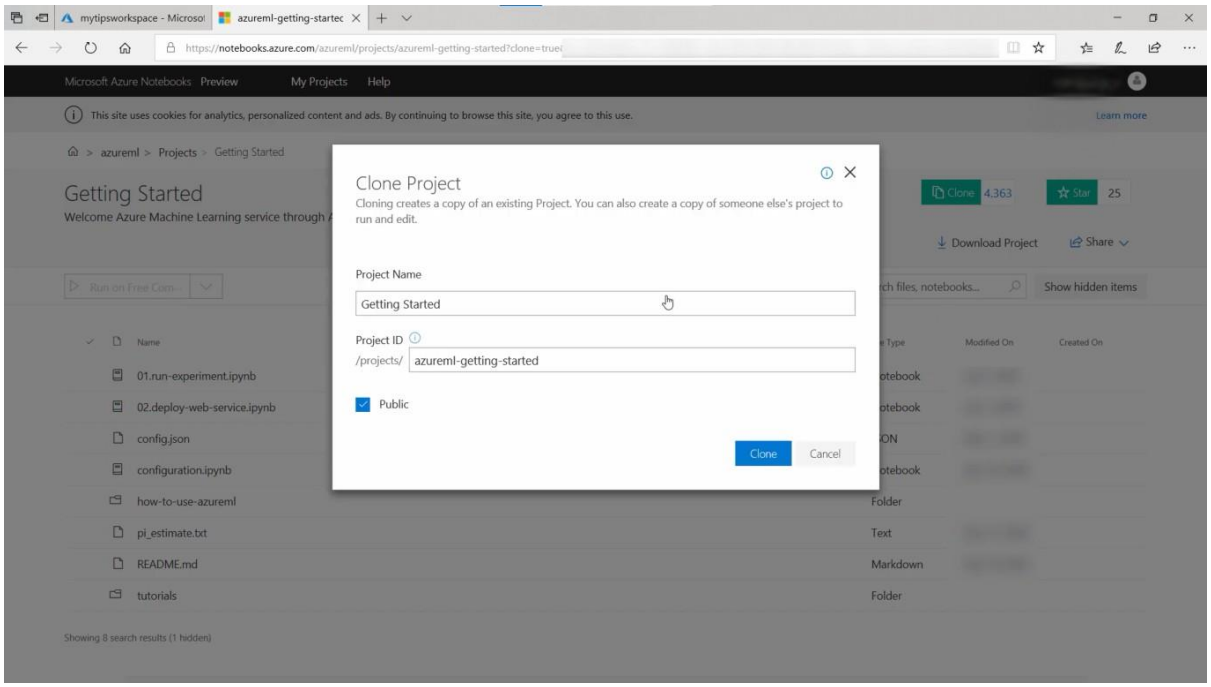
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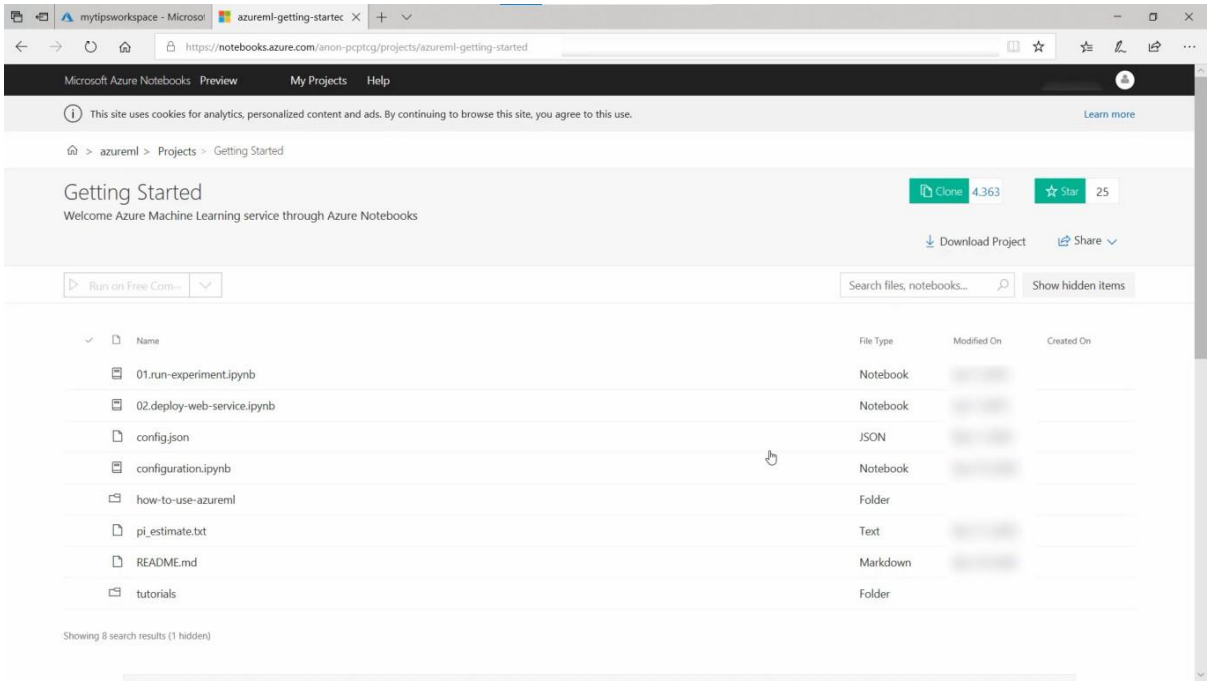
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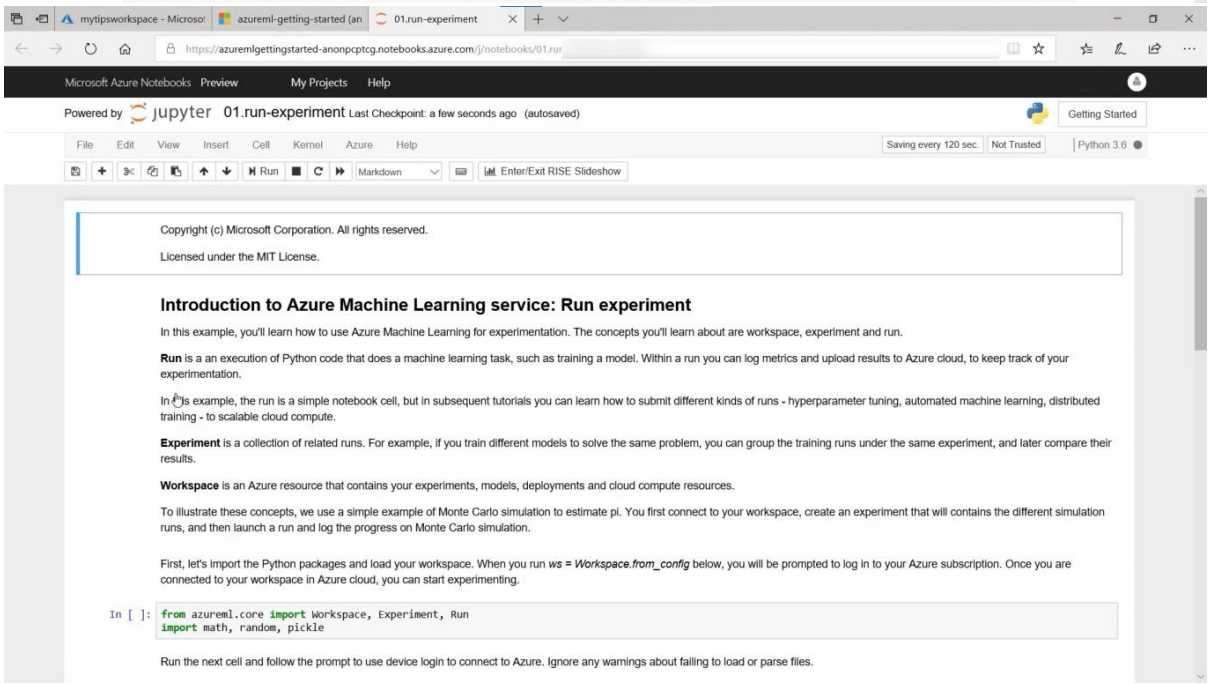
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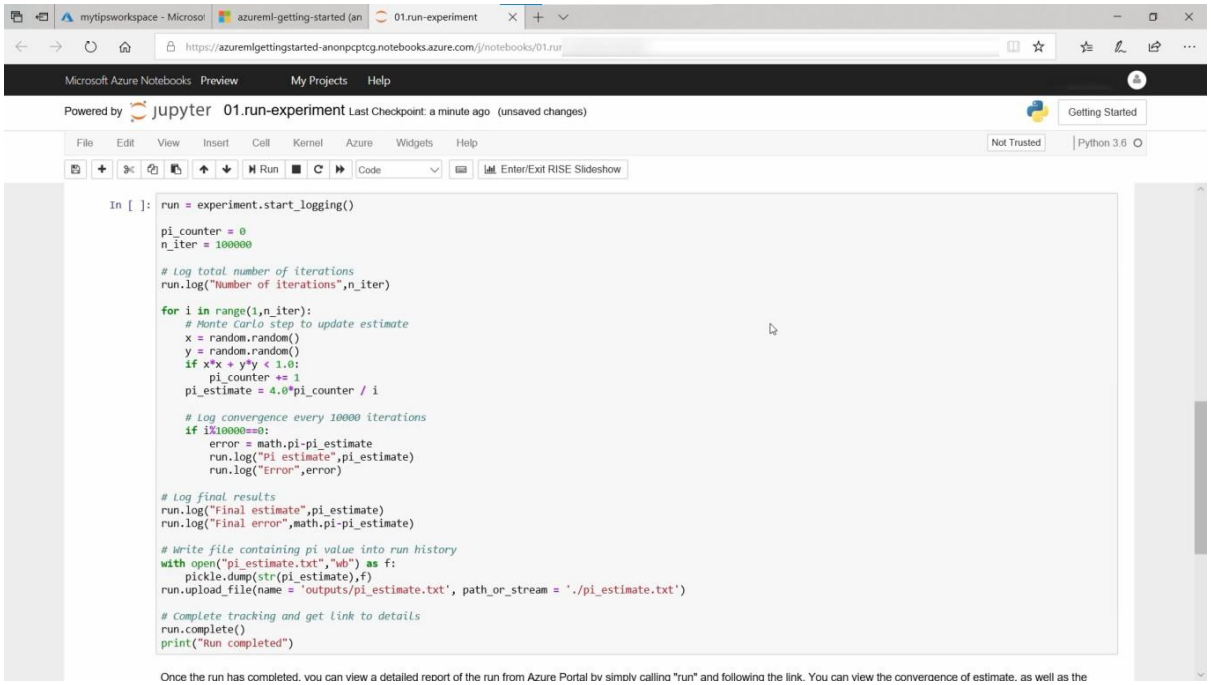
Introduction to Azure Machine Learning service: Run experiment
In this example, you'll learn how to use Azure Machine Learning for experimentation. The concepts you'll learn about are workspace, experiment and run.
Run is a an execution of Python code that does a machine learning task, such as training a model. Within a run you can log metrics and upload results to Azure cloud, to keep track of your experimentation.
In this example, the run is a simple notebook cell, but in subsequent tutorials you can learn how to submit different kinds of runs - hyperparameter tuning, automated machine learning, distributed training - to scalable cloud compute.
Experiment is a collection of related runs. For example, if you train different models to solve the same problem, you can group the training runs under the same experiment, and later compare their results.
Workspace is an Azure resource that contains your experiments, models, deployments and cloud compute resources.
To illustrate these concepts, we use a simple example of Monte Carlo simulation to estimate pi. You first connect to your workspace, create an experiment that will contains the different simulation runs, and then launch a run and log the progress on Monte Carlo simulation.
First, let's import the Python packages and load your workspace. When you run ws = Workspace.from_config below, you will be prompted to log in to your Azure subscription. Once you are connected to your workspace in Azure cloud, you can start experimenting.
In [ ]:
from azureml.core import Workspace, Experiment, Run
import math, random, pickle
Run the next cell and follow the prompt to use device login to connect to Azure. Ignore any warnings about failing to load or parse files.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Getting Started
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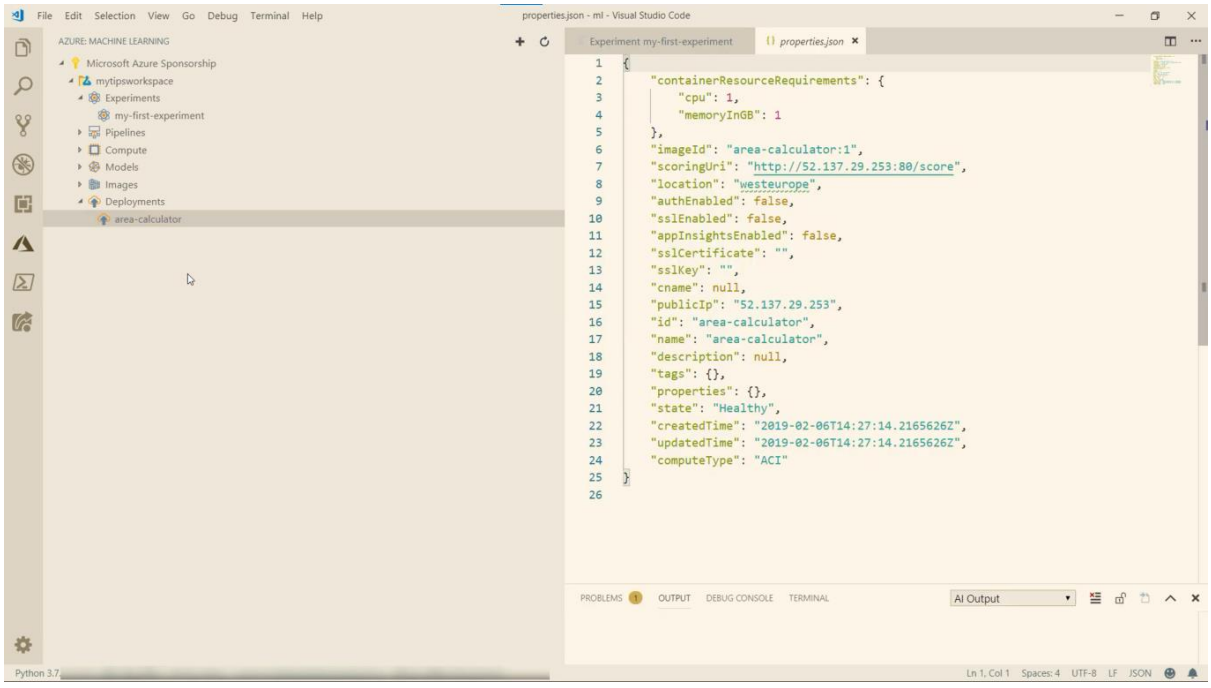
Run
Code
Enter/Exit RISE Slideshow
In [ ]:
run = experiment.start_logging()
pi_counter = 0
n_iter = 100000
# Log total number of iterations
run.log("Number of iterations",n_iter)
for i in range(1,n_iter):
# Monte Carlo step to update estimate
x = random.random()
y = random.random()
if x*x + y*y < 1.0:
pi_counter += 1
pi_estimate = 4.0*pi_counter / i
# Log convergence every 10000 iterations
if i%10000==0:
error = math.pi-pi_estimate
run.log("Pi estimate",pi_estimate)
run.log("Error",error)
# Log final results
run.log("Final estimate",pi_estimate)
run.log("Final error",math.pi-pi_estimate)
# Write file containing pi value into run history
with open("pi_estimate.txt","wb") as f:
pickle.dump(str(pi_estimate),f)
run.upload_file(name = 'outputs/pi_estimate.txt', path_or_stream = './pi_estimate.txt')
# Complete tracking and get link to details
run.complete()
print("Run completed")
Once the run has completed, you can view a detailed report of the run from Azure Portal by simply calling "run" and following the link. You can view the convergence of estimate, as well as the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Experiments
my-first-experiment
Pipelines
Compute
Models
Images
Deployments
area-calculator
Experiment my-first-experiment
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},
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PROBLEMS 1
OUTPUT
DEBUG CONSOLE
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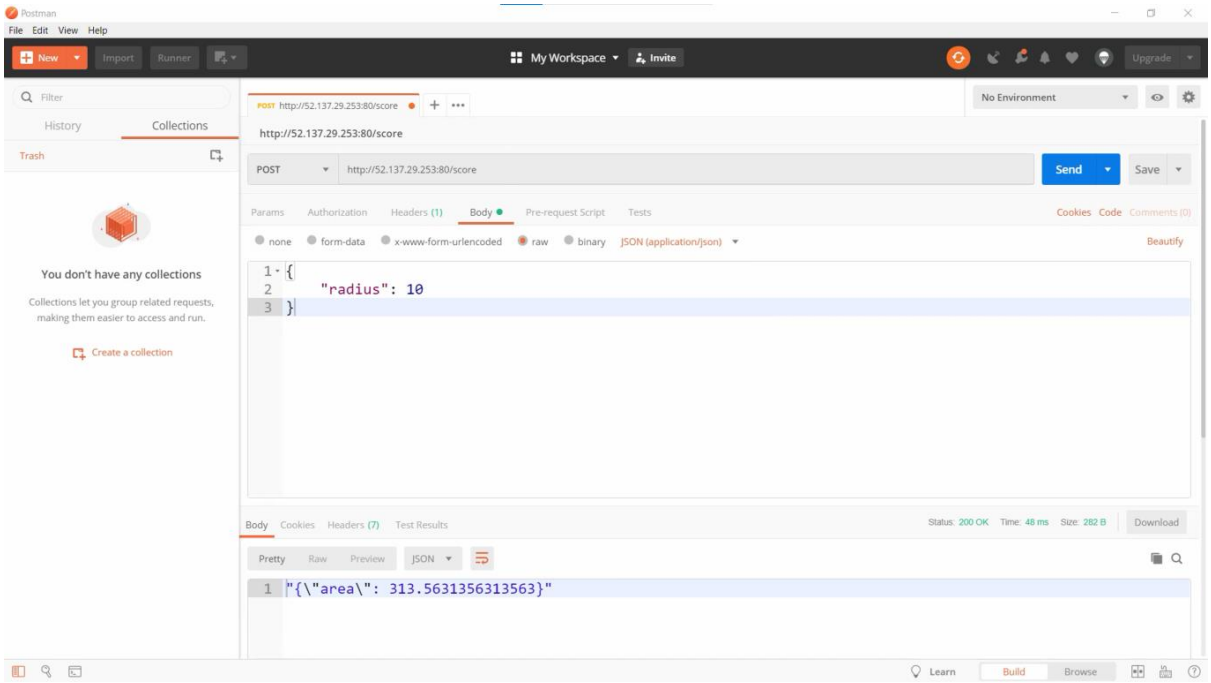
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Trash
You don't have any collections
Collections let you group related requests, making them easier to access and run.
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Body
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x-www-form-urlencoded
raw
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}
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