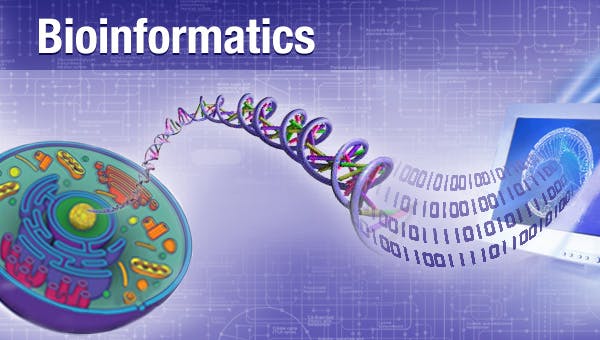
|  |
| --- |
| Name-Arabinda Chand |
| Project-Amino Acid Calculator |
| Batch-2021-2022 |

|  |
| --- |
| Computer science  2/10/2022 |

****

**Certificate**

**This is to certify that Arabinda Chand of class 12 of poddar brio international school has successfully completed his/her project work for the subject ‘Computer science’ for class XII project of the Central Board of Secondary Education in the year** **2021-2022.**

**Acknowledgement**

**I would like to thank my teacher Miss. Pooja Nimroth(PGT computer science) who gave me this opportunity to work on this project. I got to learn a lot from this project about How I can take first step towards integrating computer science with biology . I would also like to thank our school principal Miss. Rashmi Singh.**

**At last, I would like to extend my heartfelt thanks to my parents because without their help this project would not have been successful. Finally, I would like to thank my dear friends who have been with me all the time.**

**Index**

* **Introduction of sql, python & project**
* **Objectives**
* **Software & Hardware requirements**
* **Advantages & Disadvantages of the project,python & sql**
* **Coding**
* **Output screenshots**
* **Future through this project**
* **Bibliography**

**Introduction**

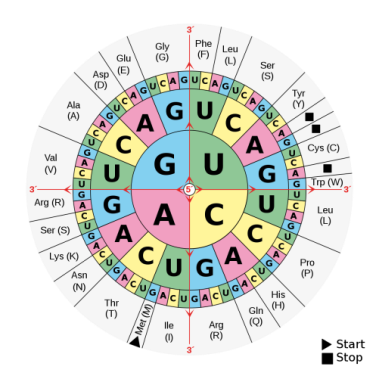
**To sql**

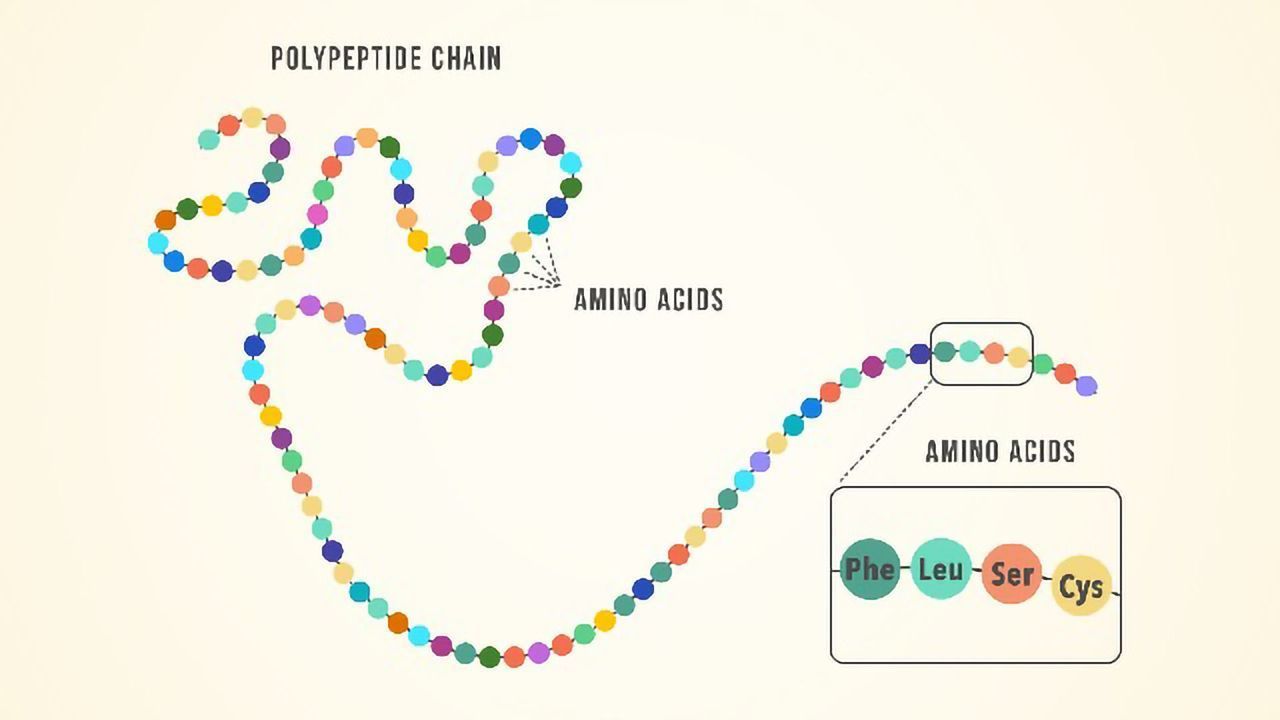
**Structured query language provides codes to define data structure, manipulate data in a database & retrieving data in a database**

**To python**

**Python is High level programming language. It was initially designed by Guido Van Rossum in 1991 in Centrum Wiskunde de Informatica, Netherlands**

**To project**

** Introducing you to the future of calculators for biological application. Launching with the glory of genetics welcome to the world of dna with amino acid calculator. Which can tell you efficiently the name of any triplet (nucleotide base) codon corresponding to any of its amino acid. You can use it instead of memorizing the stack of 64 codon table of amino acids. Which can be problematic for many & it was also the first step to achieve the target of integrating biology with computer science with using practicality. Objective**

To produce an amino-acid calculator which could recognize an element

**Hardware & software requirement**

**Hardware requirement-windows 7 laptop, a printer**

**Software requirement-python, pip connector which can connect python mysql,mysql,word(2007)**

|  |  |
| --- | --- |
| **Advantages of sql** | **Disadvantages of mysql** |
| **Sql is portable** | **More features implemented in proprietor way** |
| **It is of high speed** |
| **Easy to learn** |
| **Relational database** |
| **Not case-sensitive** | **Difficult to interface** |
| **Data consistency** |
| **Object based** |
| **Client/server** |
| **Programming & interactive language** |
| **Advantages of python** | **Disadvantages of python** |
| **Easy to learn & use** | **It** is not the **fastest language(slower than compiled ones)** |
| **General purpose programming language** | Lesser libraries than c, java & perl |
| **Interpreted(pre-compiled) &**  **Interactive** | Not strong on type binding(gives runtime error) |
| **Portable** | Not easily convertible |
| **Python library, easy & short syntax, highlighting & error detection**  **Graphical User Interface** | Primitive Database access  Weak for mobile development |
| **Extensible/extendable language** | Memory consumption |
| **Free & open source** |
| **Object oriented** |

**Project**

**Feature**

* It has average 0.5 secs runtime and it has 121 bits
* It can be used instead of memorizing the table
* It is very fast & non tedious
* It is 99% accurate
* It focuses on use of computer science in biology
* It is originally made in india
* It can also tell you about start or stop codons

**Limitations**

* It can’t be used for any other purpose
* Some people may prefer to rely more on memorizing for brainstorming for independence from the calculator

**Coding**

**code in python-**

**import mysql.connector**

**con=mysql.connector.connect(host='localhost',**

**password='12345678',**

**user='root',**

**database='amino\_acid\_calculator')**

**cursor=con.cursor()**

**code=input('enter your triplet')**

**sql='select\*from covid\_warrior where codon=%s'**

**dna=(code,)**

**cursor.execute(sql,dna)**

**output=cursor.fetchall()**

**for x in output:**

**print(x)**

**con.close()**

**code in mysql-**

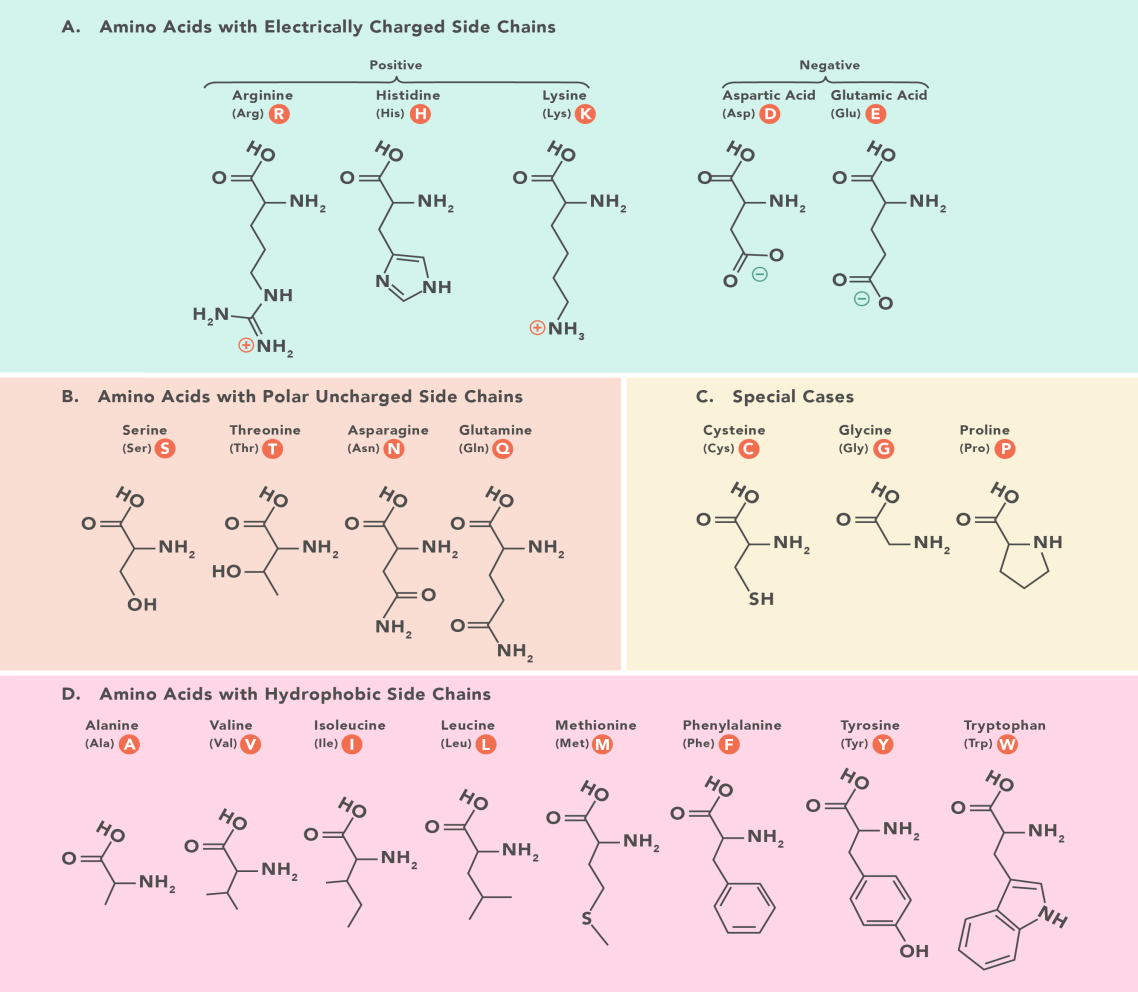
**CREATE DATABASE amino\_acid\_calculator;**

**USE amino\_acid\_calculator­;**

**CREATE TABLE covid\_warrior (codon varchar(250) NOT NULL PRIMARY KEY,amino\_acid varchar(250) NOT NULL);**

**INSERT INTO covid\_warrior (codon,amino\_acid)**

**VALUES ('UUU', 'Phenylalanine'),**

**('UUC','Phenylalanine’),**

**('UUA','Leucine'),**

**('UUG','Leucine'),**

**('CUU','Leucine'),**

**('CUC','Leucine'),**

**('CUA','Leucine'),**

**('CUG','Leucine'),**

**('AUU','Isoleucine'),**

**('AUC','Isoleucine'),**

**('AUA','Isoleucine'),**

**('AUG','Methionine(start)'),**

**('GUU','Valine'),**

**('GUC','Valine'),**

**('GUA','Valine'),**

**('GUG','Valine'),**

**('UCU','Serine'),**

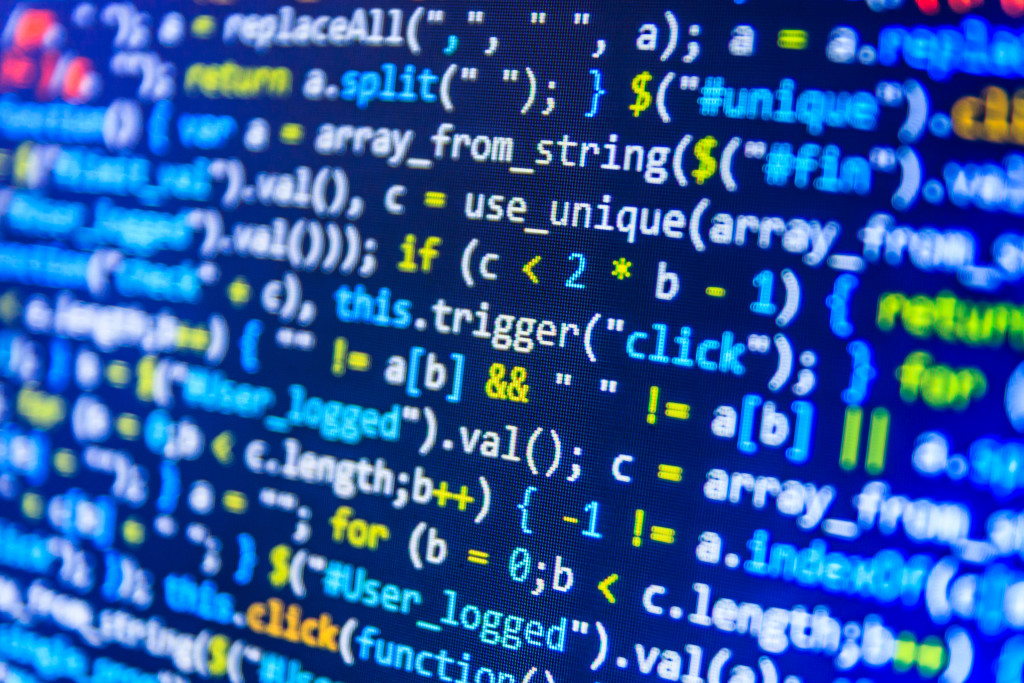
**('UCC','Serine'),**

**('UCA','Serine'),**

**('UCG','Serine'),**

**('CCU','Proline'),**

**('CCC','Proline'),**

**('CCA','Proline'),**

**('CCG','Proline'),**

**('ACU','Threonine'),**

**('ACC','Threonine'),**

**('ACA','Threonine'),**

**('ACG','Threonine'),**

**('GCU','Alanine'),**

**('GCC','Alanine'),**

**('GCA','Alanine'),**

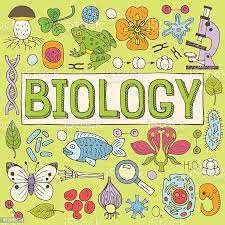
**('GCG','Alanine'),**

**('UAU','Tryptophan'),**

**('UAC','Tryptophan'),**

**('UAA','Stop(ochre)'),**

**('UAG','Stop(amber)'),**

**('CAU','Histidine'),**

**('CAC','Histidine'),**

**('CAA','Glutamine'),**

**('CAG','Glutamine'),**

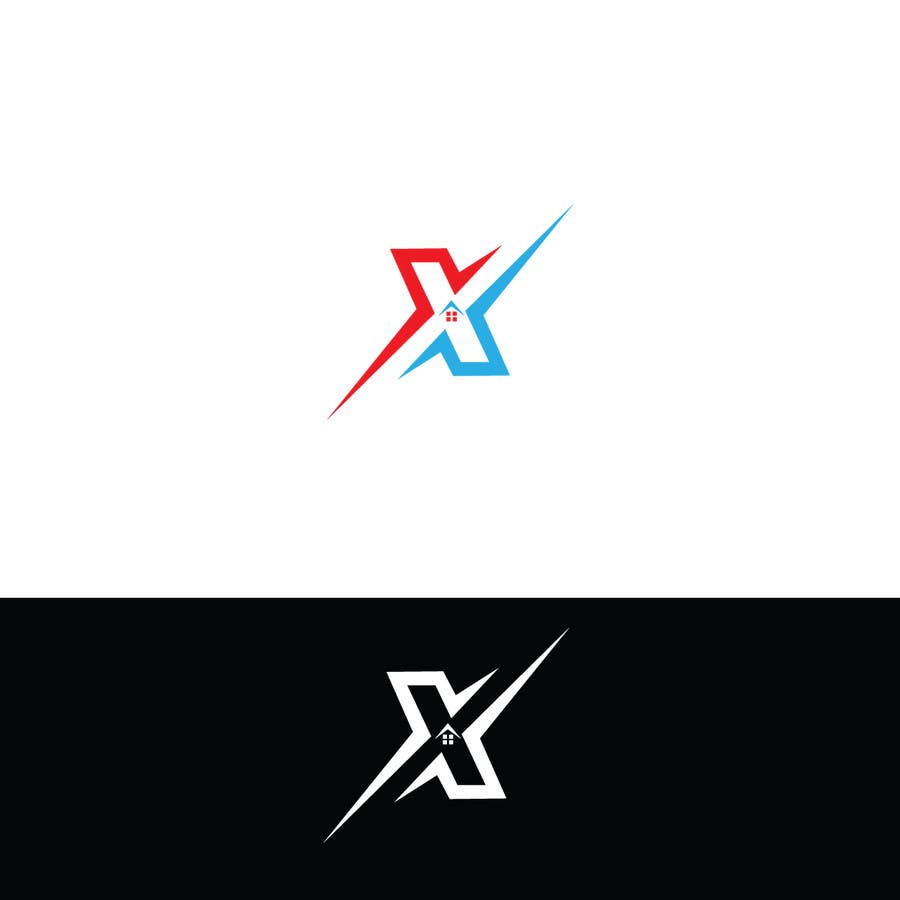
**('AAU','Asparigine'),**

**('AAC','Asparigine'),**

**('AAA','Lysine'),**

**('AAG','Lysine'),**

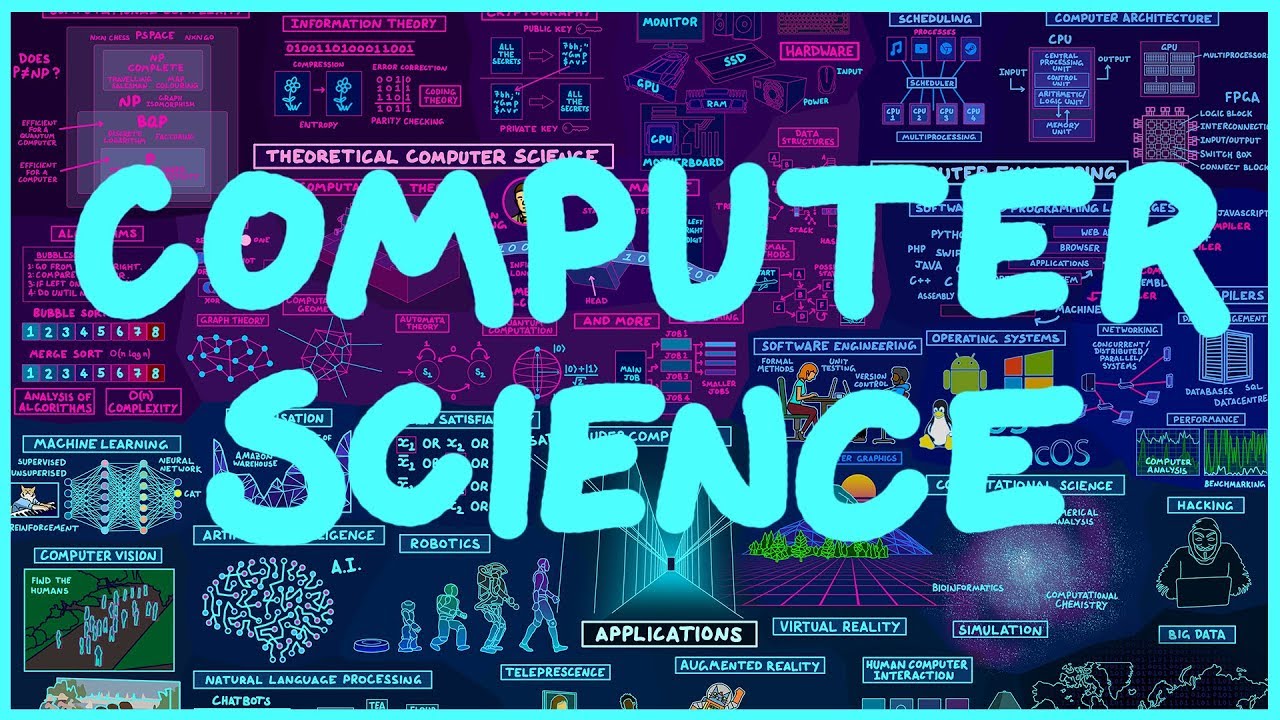
**('GAU','Aspartic acid'),**

**('GAC','Aspartic acid'),**

**('GAA','Glutamic acid'),**

**('GAG','Glutamic acid'),**

**('UGU','Cysteine'),**

**('UGC','Cysteine'),**

**('UGA','Stop(opal)'),**

**('UGG','Tryptophan'),**

**('CGU','Arginine'),**

**('CGC','Arginine'),**

**('CGA','Arginine'),**

**('CGG','Arginine'),**

**('AGU','Serine'),**

**('AGC','Serine'),**

**('AGA','Arginine'),**

**('AGG','Arginine'),**

**('GGU','Glycine'),**

**('GGC','Glycine'),**

**('GGA','Glycine'),**

**('GGG','Glycine');**

**Future through this project**

**Bioinformatics is an emerging area where computers make old biology efficient whose era is yet to boom because people are getting interested for the speed,efficiency & accuracy of computer in biology.**



# Bibliography

All In One Computer science

Preeti Arora Computer science

Rachna Sagar Computer science

Sumita Arora Computer science