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PYTHON PROGRAMMING ON SUPER FIBONACCI GRACEFUL ANTI – MAGIC LABELING FOR ZODIAC SIGNS

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ABSTRACT

A graph $G = (V, E, \phi)$ *with* p vertices and q edges. A Super Fibonacci Graceful Anti-magic labeling[$SFGAML$] of G is an injective function $\phi: V \to \{0, F_2, F_3, \dots, F_{q+1}\}$ such that the induced edge labeling $\phi^*(uv) = |\phi(u) - \phi(v)|$ is a bijection onto the set $\{F_2, F_3, F_4, \dots, F_{q+1}\}$. In addition, all the vertex sums are pairwise distinct and all the edges are unique. If a graph G admits a Super Fibonacci Graceful Anti magic labeling[$SFGAML$] then G is called Super Fibonacci Graceful Anti-Magic Graph [$SFGAMG$]. In this article the concept of Super Fibonacci Graceful Labeling is investigated of Zodiac Signs.

MSC Classification: 05C76, 05C78

KEYWORDS: Zodiac Signs, Super Fibonacci Graceful Anti-Magic Labeling [$SFGAML$], Super Fibonacci Graceful Anti-Magic Graph [$SFGAMG$].

1.INTRODUCTION :

The Western Astrology is more or less Same to Vedic Astrology. The Zodiac is categorized into twelve signs in western astrology and astronomy. These twelve signs occupies 30^0 of celestial longitude with corresponding to the following stars constellation: Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius, Capricorn, Aquarius and Pisces. In common these Zodiac signs are categorized into four variations based on Masculine and Feminine features. They are Fire , Air ,Water and Earth. Fire and Air includes Masculine Signs. Water and Earth includes Feminine signs. Aries, Gemini, Leo, Libra, Sagittarius, Aquarius are Masculine Zodiac Signs and Taurus, Cancer, Virgo, Scorpio, Capricorn, Pisces are Feminine Zodiac Signs. It is obvious that opposite signs are meant to be soulmates because they bring each other balance. Here the Super Fibonacci Graceful Anti- Magic Labeling for Masculine Zodiac Signs.

2.DEFINITION

Definition 2.1: The Fibonacci numbers $F_1, F_2, F_3, \dots$ are defined by $F_0 = 0, F_1 = 1, F_2 = 1, \dots$ and $F_{n+1} = F_n + F_{n-1}$, n>1. The Fibonacci sequence is 1, 1, 2,3,5,...

Definition 2.2: A Super Fibonacci Graceful Anti-magic labeling[$SFGAML$] of G is an injective function $\phi: V \to \{0, F_2, F_3, \dots, F_{q+1}\}$ such that the induced edge labeling $\phi^*(uv) = |\phi(u) - \phi(v)|$ is a bijection onto the set $\{F_2, F_3, F_4, \dots, F_{q+1}\}$. In addition, all the vertex sums are pairwise distinct and all the edges are unique. If a graph G admits a Super Fibonacci Graceful Anti magic labeling[$SFGAML$] then G is called Super Fibonacci Graceful Anti- Magic Graph [$SFGAMG$].

Definition 2.3: In western Astrology and astronomy the zodiac is divided into twelve signs. That is Aries , Taurus , Gemini, Cancer , Leo, Virgo, Libra, Scorpio, Sagittarius, Capricorn, Aquarius and Pisces.

ASTROLOGY – ZODIAC – SIGNS –CIRCLE:

3. RESULTS

3.1.Theorem :

The Aries graph P_6 is $SFGAMG$.

Proof :

Let P_6 be Aries graph. The order and size of the Aries graph P_6 $is\ p = 6$ and $q = 5$. $V(G) = \{v_1, v_2, \dots, v_6\}$. Let v_1 be the first vertex of the path P_6 and let $v_2, v_3, \dots, v_6$ be the another vertices of the Path P_6.

$E(G) = \{e_{ij}\}$ here $e_{ij} = (v_i v_j)$ $j = i + 1(always)$.

Define $\phi: V \longrightarrow \{0, F_2, F_3, \dots, F_{q+1}\}$

$\phi(v_1) = F_{q+1}$, $\phi(v_2) = F_0$

$\phi(v_3) = F_q$, $\phi(v_4) = F_3$,

$\phi(v_5) = F_2, \phi(v_6) = F_4$

Here all the vertex sums are pairwise distinct and all the edges are unique.

Thus ϕ admits the $SFGAML$.

Hence Aries graph is $SFGAMG$.

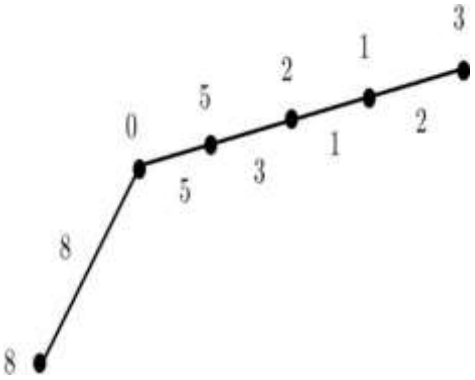


Figure 2 : $Aries\ P_6$

Figure 2 : Aries in Astronomy

3.2.Theorem :

The Gemini graph P_{12} is $SFGAMG$.

Proof :

Let P_{12} be Gemini graph. The order and size of the Gemini graph P_{12} $is\ p = 12$ and $q = 11$. $V(G) = \{v_1, v_2, \dots, v_{12}\}$. Let v_1 be the first vertex of the path P_{12} and let $v_2, v_3, \dots, v_{12}$ be the another vertices of the Path P_{12}.

$E(G) = \{e_{ij}\}$ here $e_{ij} = (v_i v_j)$ $j = i + 1(always)$.

Define $\phi: V \longrightarrow \{0, F_2, F_3, \dots, F_{q+1}\}$

$\phi\ (v_{2i-1}) = F_{q+2-i},\ for\ i = 1,2,3$

$\phi\ (v_{2i+2}) = F_{10-i},\quad for\ i = 1,2$

$\phi\ (v_2) = F_{0,}$

$\phi\ (v_{2i-1}) = F_{2i-2+(4-i)}\ \ for\ i = 4,5,6$

$\phi\ (v_{11}) = F_2, \phi\ (v_7) = F_7$

Here all the vertex sums are pairwise distinct and all the edges are unique.

Thus ϕ admits the $SFGAML$.

Hence Gemini graph is $SFGAMG$.

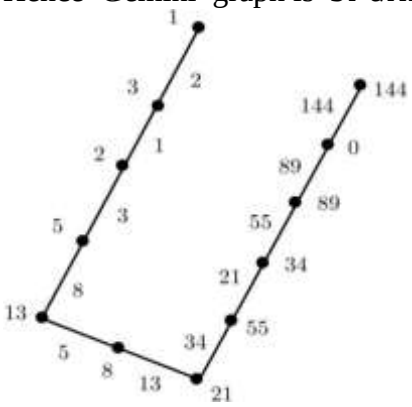


Figure 3 : Gemini P_{12}

Figure 4 : Gemini in Astronomy

3.3.Theorem :

The Leo graph $C_6\ AP_3$ is a FGG .

Proof :

Let $C_6\ AP_3$ be Leo graph. The order and size of the Leo graph $C_6\ AP_3\ \ is\ p = 9$ and $q = 9$. $V(G) = \{v_1, v_2, \dots, v_6, w_1, w_2, w_3\}$. Let v_1 be the first vertex of the cycle C_6 and let $v_2, v_3, \dots, v_6$ be the another vertices of the Cycle C_6 and w_1, w_2, w_3 be the vertices of the path P_3. $E(G) = \{e_i, e_{ij}, e_{11}\}$ here $e_i = (v_i v_j)$, and $\{e_{ij}\} = (w_i w_j)$, $\{e_{11}\} = (v_1 w_1)$.

Define $\phi: V \longrightarrow \{0, F_2, F_3, \dots, F_{q+1}\}$

$\phi\ (v_1) = F_0,\ \phi\ (v_2) = F_{q+1},\ \phi\ (v_5) = F_7, \phi\ (v_6) = F_6$

$\phi\ (v_3) = F_{q-1,}\ \phi\ (v_4) = F_{q,}$

$\phi\ (w_1) = F_4, \phi\ (w_2) = F_{2,}\quad \phi\ (w_3) = F_3$

Here all the vertex sums are pairwise distinct and all the edges are unique.

Thus ϕ admits the $SFGAML$. Hence Leo graph is $SFGAMG$.

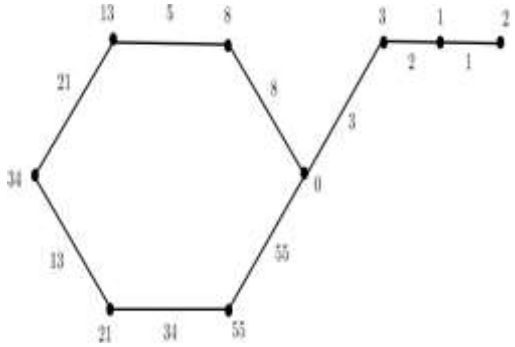


Figure 5 : Leo graph $C_6\ AP_3$

Figure 6 : Leo in Astronomy

3.4.Theorem :

The Libra graph $P_3 A\ C_3 AP_2$ is $SFGAMG$.

Proof :

Let $P_3A\,C_3AP_2$ be a Libra graph. The order and size of the Libra graph $is\ p = 8$, $q = 8$. $V(G) = \{v_1, v_2, v_3, u_1, u_2, u_3, w_1, w_2\}$. Let v_1, v_2, v_3 be the vertices of the cycle C_3, u_1, u_2, u_3 be the vertices of Path P_3 and w_1, w_2 be the vertices of Path P_2.

Define $\phi: V \longrightarrow \{0, F_2, F_3, \dots, F_{q+1}\}$

$\phi(v_1) = F_0, \quad \phi(u_1) = F_2$

$\phi(v_{i+1}) = F_{q,+1} \ for\ i = 1,2$

$\phi(w_i) = F_{8-i} \quad for\ i = 1,2$

$\phi(u_{2i-1}) = F_{2i} \quad for\ i = 1,2$

Here all the vertex sums are pairwise distinct and all the edges are unique.

Thus ϕ admits the $SFGAML$. Hence Libra graph is $SFGAMG$.

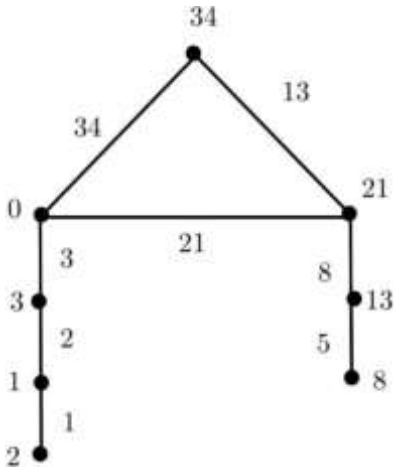


Figure 7 : Libra graph $P_3A\,C_3AP_2$

Figure 8 : Libra in Astronomy

3.5. Theorem :

The Aquarius graph T_{13} is a FGG .

Proof :

Let T_{13} be a Aquarius graph. Here $is\ p = 13$ and $q = 12$. $V(G) = \{v_1, v_2, \dots, v_{11}, w_1, w_2\}$.Let $v_2, v_3, \dots, v_{11}, w_1, w_2$ be the vertices of Tree T_{13}.

$E(G) = \{e_{91}, e_{ij}, g_{12}\}$ here $e_{91} = (v_9 w_1)$, $g_{12} = (w_2 w_1)$,and $\{e_{ij}\} = (v_i v_j)$.

Define $\phi: V \longrightarrow \{0, F_2, F_3, \dots, F_{q+1}\}$

$\phi(v_1) = F_0, \quad \phi(v_7) = F_{10}$

$\phi(v_{2i}) = F_{q+2-i}, \ for\ i = 1,2$

$\phi(v_{2i+1}) = F_{q-i}, \ for\ i = 1,2$

$\phi(v_{2i}) = F_{q-1-i}, \ for\ i = 3,4$

$\phi(v_9) = F_{5,} \phi(v_9) = F_{3,} \phi(v_{11}) = F_{2,}$

$\phi(w_2) = F_6, \ \phi(w_1) = F_4.$

Here all the vertex sums are pairwise distinct and all the edges are unique.

Thus ϕ admits the $SFGAML$.Hence Aquarius graph is $SFGAMG$.

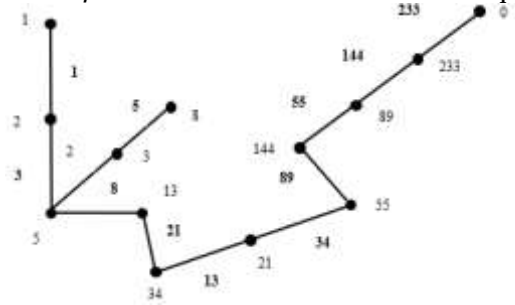


Figure 9: Aquarius graph T_{13}

Figure 10: Aquarius in Astronomy

PYTHON PROGRAMME:

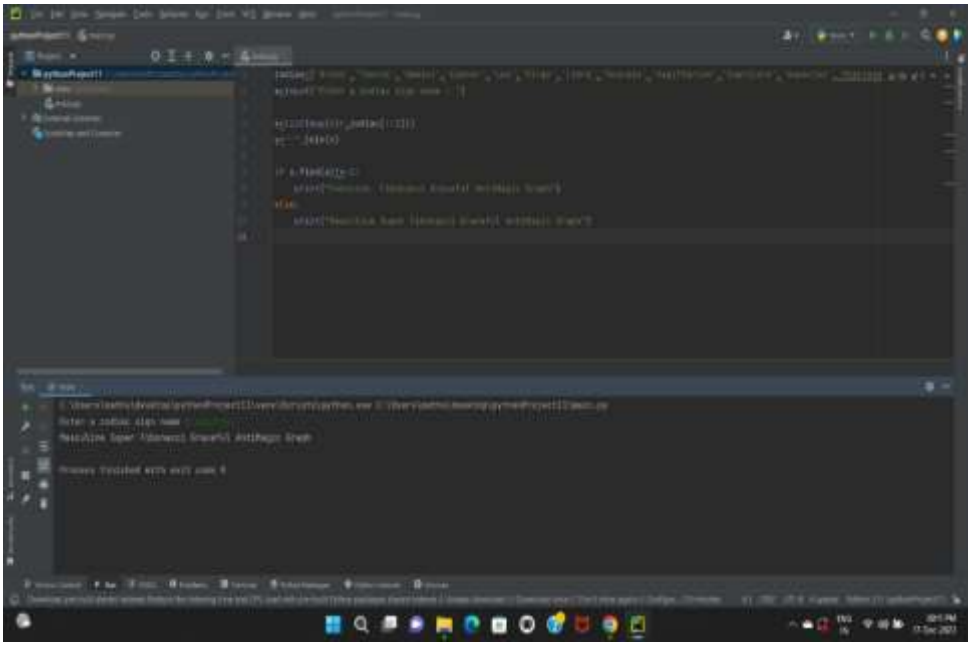
```
zodiac=['Aries','Taurus','Gemini','Cancer','Leo','Virgo','Libra','Scorpio','Sagittarius','Capricorn','Aquarius','Pisces']
a=input("Enter a zodiac sign name : ")

x=list(map(str,zodiac[::1]))
y="-".join(x)

if y.find(a) !=-1:
   print("Feminine-Fibonacci Graceful Antimagic Graph ")
else:
   print("Masculine- Super Fibonacci Graceful Antimagic Graph ")
```

This Python Program is used to find the zodiac signs are Masculine or Feminine and $FGAMG$ or $SFGAMG$. Python coding and output is enclosed in the Appendix.

CONCLUSION:

In this article the concept of Super Fibonacci Graceful Anti-Magic Labeling is explained. The Masculine Zodiac Signs are demonstrated and proved that they are Super Fibonacci Graceful Anti – Magic Graphs. Python coding is generated to find the zodiac signs are Masculine or Feminine and $FGAMG$ or $SFGAMG$.

APPENDIX :



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