Лабораторная работа 5

**Эволюционные методы поиска решения оптимизационных переборных задач**

**Цель работы:** познакомиться с работой типового генетического алгоритма для нахождения экстремума функции.

**Задание к лабораторной работе**

Разработать алгоритм и составить программу поиска экстремума функции с помощью генетического алгоритма, имеющего заданные параметры (табл. 1). Для всех вариантов считать кроссовер и мутацию – одноточечными, мощность популяции – постоянной, длина хромосомы – определяется промежутком, на котором находится экстремум.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| № | Характеристики целевой функции | | | Характеристики ГА | | | |
| Целевая функция | Экс-тре-мум | Проме-жуток | Мощность популяции | Вероятность проведения кроссовера | Вероятность проведения мутации | Закон расп-реде-ления |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 5 | ln(1 + cos(x)) | Max | [0, 31] | 16 | 0.75 | 0.025 | Равн |

**Генетический алгоритм, использующий эволюционный метод поиска экстремума функции.**

**Классический генетический алгоритм:**

1. инициализация, или выбор исходной популяции хромосом;
2. оценка приспособленности хромосом в популяции;
3. проверка условия остановки алгоритма;
4. селекция хромосом;
5. применение генетических операторов;
6. формирование новой популяции;
7. выбор «наилучшей» хромосомы.

**Блок-схема:**



**Структуры данных, демонстрирующие работу операторов ГА в ходе эволюции.**

**Генотип**

Генотип представлен набором битов (генов).



**Популяция**

Популяция представлена набором генотипов.



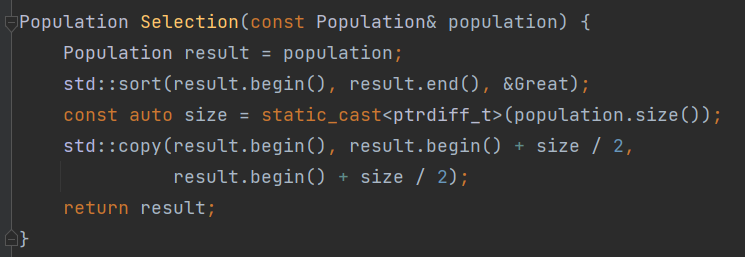
**Оператор селекции**

Селекция производится при помощи следующего алгоритма:

1. Текущая популяция сортируется по убыванию значения функции приспособленности.
2. Первая половина (лучшие особи) элементов копируются и дублируется во вторую половину.

Пример:

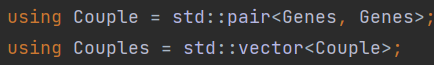
1. [1, 2, 6, 4, 5, 3] -> [6, 5, 4, 3, 2, 1]
2. [6, 5, 4, 3, 2, 1] -> [6, 5, 4, 6, 5, 4]



**Оператор скрещивания**

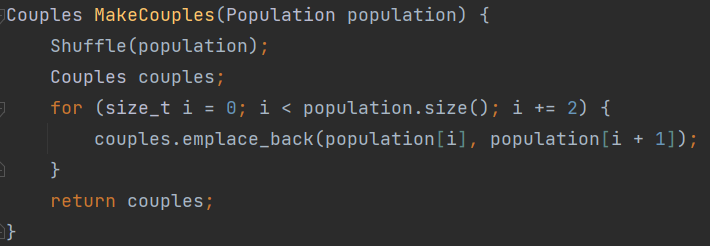
Используются дополнительные структуры:

1. Пара родителей.
2. Список пар родителей.

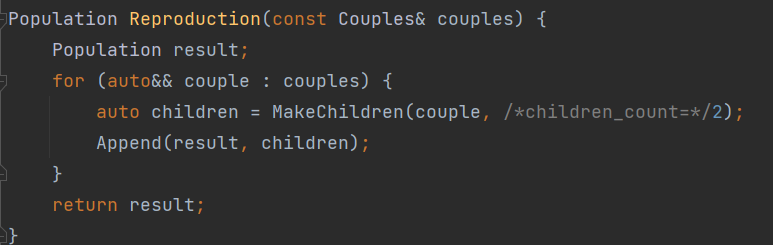


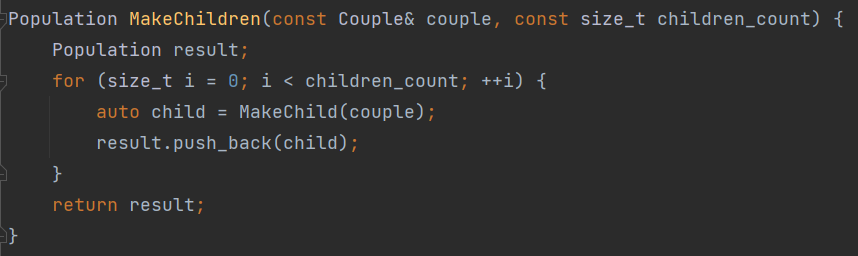
Скрещивание происходит следующим образом:

Выбранные после селекции особи перемешиваются случайным образом. После этого последовательно формируются пары родителей. Благодаря предварительному перемешиванию обеспечивается случайность формируемых пар.



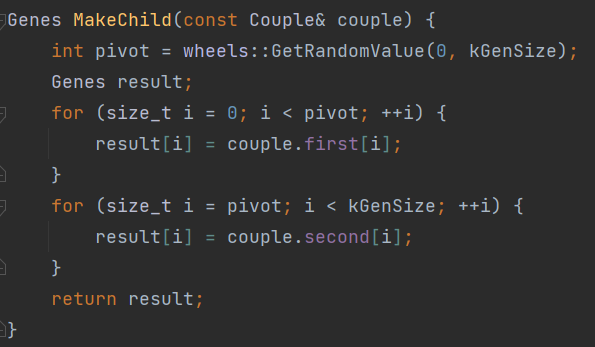
Каждая пара родителей дает потомство в количестве 2 потомков.





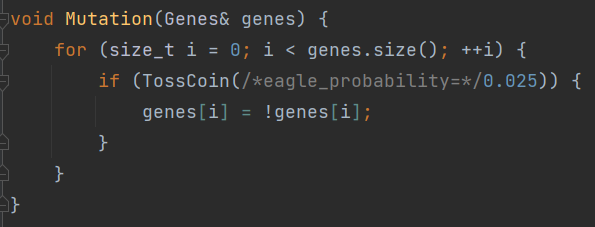
Создание потомка происходит следующим образом:

1. Случайно выбирается номер гена.
2. С первого по выбранный ген копируется генотип первого родителя.
3. С выбранного до последнего гена копируется генотип второго родителя.



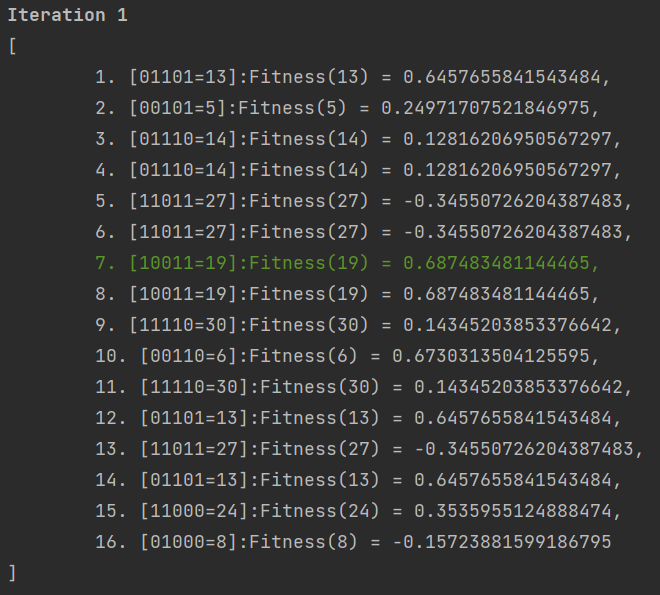
**Оператор мутации**

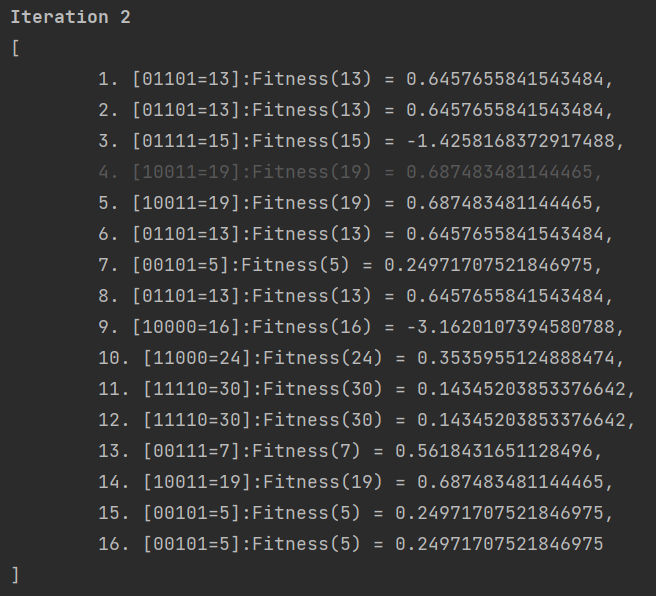
Каждый ген с указанной вероятностью может мутировать (изменить свое значение на обратное).

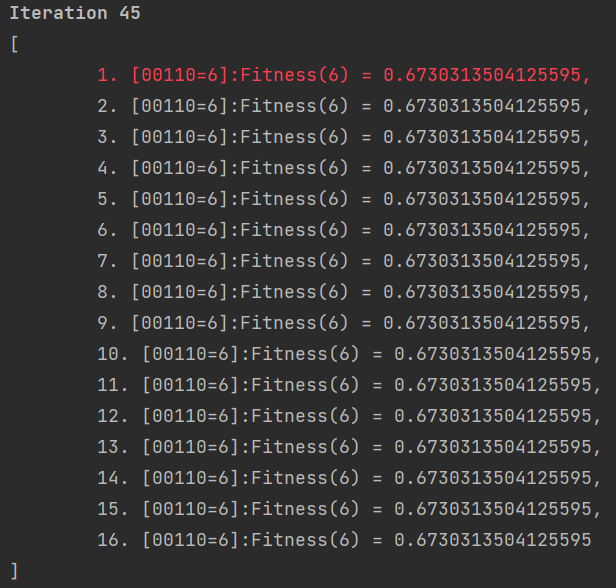


**Вывод программы**

В каждой популяции выделяется особь с максимальным значением функции приспособленности. Если это значение превышает максимум всех предыдущих поколений, то строка выделяется зеленым. Если это значение равно максимальному среди всех предыдущих поколений, то выделяется серым. Если это значение меньше чем максимум всех предыдущих, то выделяется красным







**Графическая иллюстрация поиска экстремума.**

Функция: ln(1 + cos(x))

График максимальных значений каждого поколения.



График средних значений каждого поколения.



Если заменить функцию на y = x2 (Эта функция монотонно возрастает и не отрицательна. Также имеет 1 максимум).

График максимальных значений каждого поколения (для y = x2).

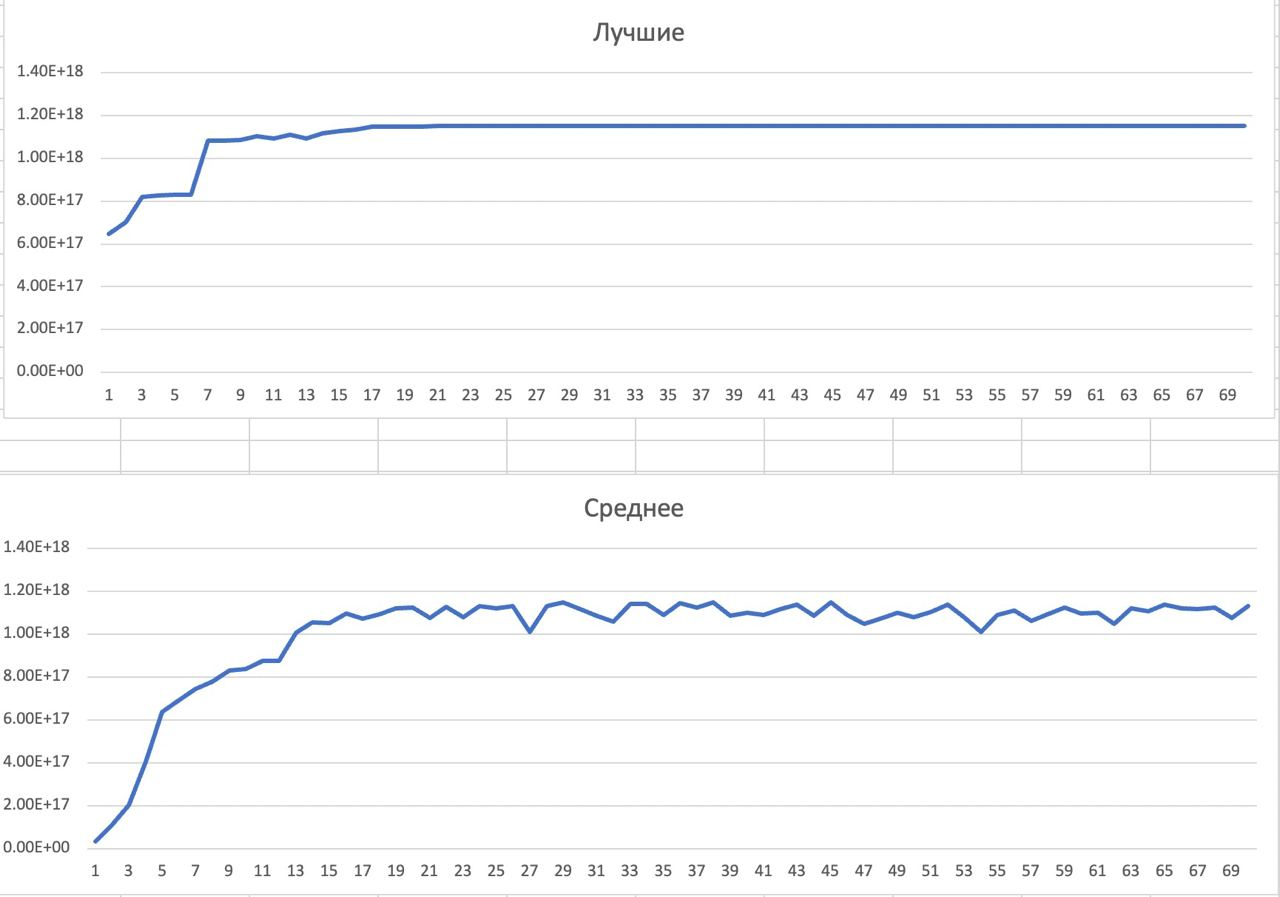
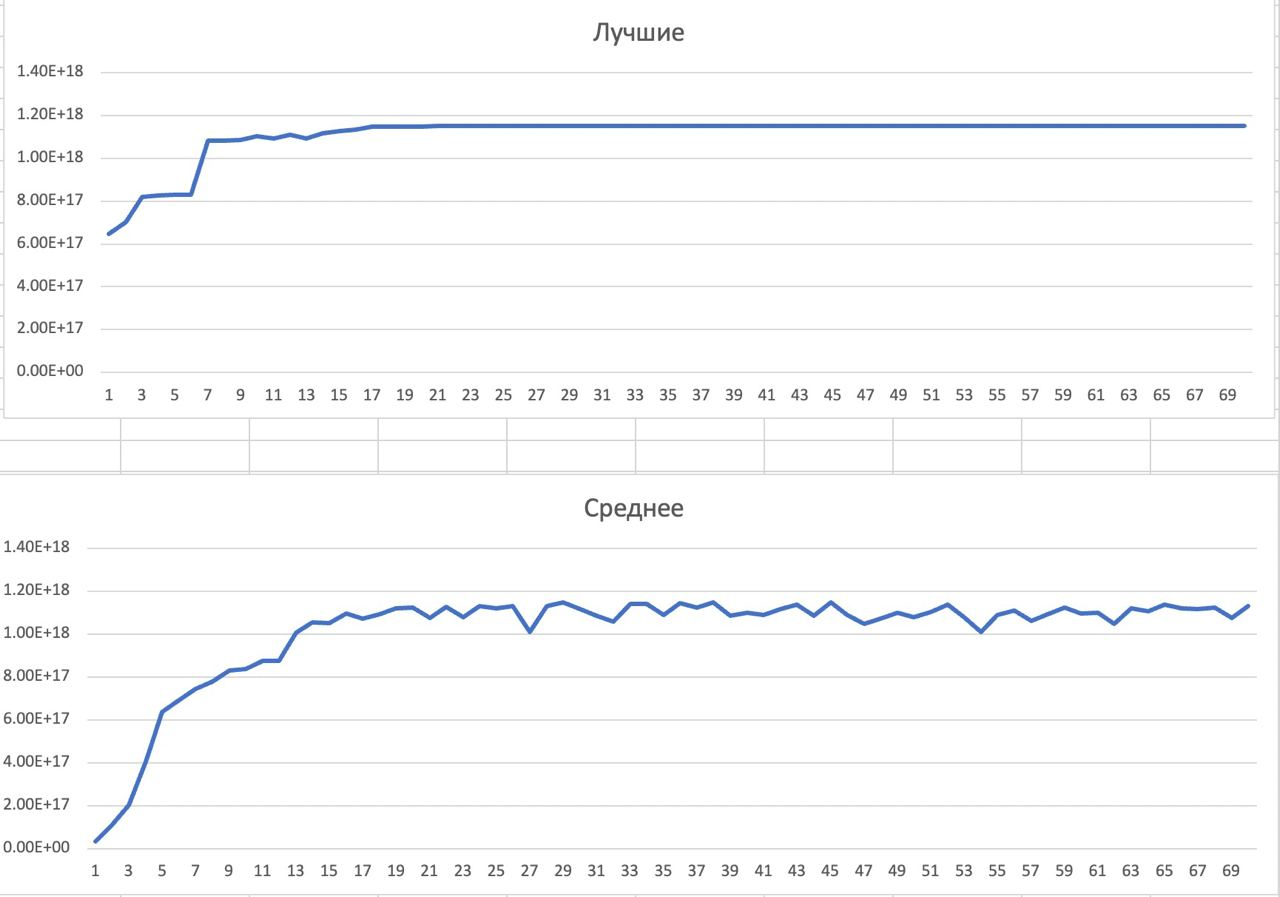


График средних значений каждого поколения (для y = x2).



**Исходный код программы.**

#include <wheels/random/random.hpp>

#include <wheels/io/io.hpp>

#include <bitset>

#include <vector>

#include <algorithm>

#include <iostream>

#include <fmt/color.h>

#include <string>

static constexpr size\_t kPopulationSize{16};

static constexpr size\_t kGenSize{5};

using Genes = std::bitset<kGenSize>;

using Population = std::vector<Genes>;

using Couple = std::pair<Genes, Genes>;

using Couples = std::vector<Couple>;

double GetProbability() {

return static\_cast<double>(wheels::GetRandomValue()) / std::numeric\_limits<int>::max();

}

bool TossCoin(double eagle\_probability) {

return GetProbability() < eagle\_probability;

}

Population MakePopulation(const size\_t population\_size,

const size\_t gen\_size) {

Population population(population\_size);

for (auto&& genes : population) {

genes = wheels::GetRandomValue(0, (1 << gen\_size) - 1);

}

return population;

}

double Foo(size\_t value) {

return std::log(1 + std::cos(value));

}

double Foo(const Genes& genes) {

return Foo(genes.to\_ulong());

}

bool Less(const Genes& lhs, const Genes& rhs) {

return Foo(lhs) < Foo(rhs);

}

bool Great(const Genes& lhs, const Genes& rhs) {

return Less(rhs, lhs);

}

Population Selection(const Population& population) {

Population result = population;

std::sort(result.begin(), result.end(), &Great);

const auto size = static\_cast<ptrdiff\_t>(population.size());

std::copy(result.begin(), result.begin() + size / 2,

result.begin() + size / 2);

return result;

}

void Shuffle(Population& population) {

std::shuffle(population.begin(), population.end(),

wheels::GetCurrentGenerator());

}

Couples MakeCouples(Population population) {

Shuffle(population);

Couples couples;

for (size\_t i = 0; i < population.size(); i += 2) {

couples.emplace\_back(population[i], population[i + 1]);

}

return couples;

}

Genes MakeChild(const Couple& couple) {

int pivot = wheels::GetRandomValue(0, kGenSize);

Genes result;

for (size\_t i = 0; i < pivot; ++i) {

result[i] = couple.first[i];

}

for (size\_t i = pivot; i < kGenSize; ++i) {

result[i] = couple.second[i];

}

return result;

}

Population MakeChildren(const Couple& couple, const size\_t children\_count) {

Population result;

for (size\_t i = 0; i < children\_count; ++i) {

auto child = MakeChild(couple);

result.push\_back(child);

}

return result;

}

template <typename T>

void Append(std::vector<T>& lhs, const std::vector<T>& rhs) {

for (auto&& child : rhs) {

lhs.push\_back(child);

}

}

Population Reproduction(const Couples& couples) {

Population result;

for (auto&& couple : couples) {

auto children = MakeChildren(couple, /\*children\_count=\*/2);

Append(result, children);

}

return result;

}

void Mutation(Genes& genes) {

for (size\_t i = 0; i < genes.size(); ++i) {

if (TossCoin(/\*eagle\_probability=\*/0.025)) {

genes[i] = !genes[i];

}

}

}

void Mutation(Population& population) {

for (auto& genes : population) {

Mutation(genes);

}

}

Population::const\_iterator GetBest(const Population& population) {

return std::max\_element(population.begin(), population.end(),

[](const Genes& lhs, const Genes& rhs) {

return Foo(lhs) < Foo(rhs);

});

}

void Println(const Population& population, size\_t index, fmt::color color) {

static std::string format{"{0}. [{1}={2}]:Fitness({2}) = {3}"};

fmt::print("[\n");

for (size\_t i = 0; i < population.size() - 1; ++i) {

fmt::print("\t");

auto&& genes = population[i];

if (i == index) {

fmt::print(fg(color), format + ", ", i + 1, genes.to\_string(), genes.to\_ulong(), Foo(genes));

} else {

fmt::print(format + ", ",

i + 1,

genes.to\_string(),

genes.to\_ulong(),

Foo(genes));

}

fmt::print("\n");

}

auto genes = population.back();

if (index == population.size() - 1) {

fmt::print(fg(color), "\t" + format + "\n]\n", population.size(), genes.to\_string(), genes.to\_ulong(), Foo(genes));

} else {

fmt::print("\t" + format + "\n]\n", population.size(), genes.to\_string(), genes.to\_ulong(), Foo(genes));

}

}

size\_t GetIndex(const Population& population, Population::const\_iterator it) {

return it - population.begin();

}

Population NextPopulation(const Population& population) {

auto bests = Selection(population);

auto couples = MakeCouples(bests);

auto children = Reproduction(couples);

Mutation(children);

return children;

}

void Algorithm() {

auto population = MakePopulation(kPopulationSize, kGenSize);

double best\_value = -10000000000;

size\_t best\_value\_iteration;

size\_t index\_of\_best\_value;

for (size\_t i = 0; best\_value != Foo(0); ++i) {

population = NextPopulation(population);

auto best\_it = GetBest(population);

double current\_best\_value = Foo(\*best\_it);

size\_t current\_index\_of\_best = GetIndex(population, best\_it);

fmt::print(fg(fmt::color::azure), "Iteration {}\n", i + 1);

if (best\_value < current\_best\_value) {

Println(population, current\_index\_of\_best, fmt::color::green);

best\_value = current\_best\_value;

best\_value\_iteration = i;

index\_of\_best\_value = current\_index\_of\_best;

} else if (best\_value == current\_best\_value) {

Println(population, current\_index\_of\_best, fmt::color::gray);

} else {

Println(population, current\_index\_of\_best, fmt::color::red);

}

}

fmt::print(fg(fmt::color::azure),

"\nBest result by {} iteration\n", best\_value\_iteration + 1);

Println(population, index\_of\_best\_value, fmt::color::green);

}

int main() {

system("Color");

Algorithm();

return 0;

}

**Полный вывод работы алгоритма**

Iteration 1

[

1. [11010=26]:Fitness(26) = 0.4989064653743698,

2. [11110=30]:Fitness(30) = 0.14345203853376642,

3. [11011=27]:Fitness(27) = -0.34550726204387483,

4. [01101=13]:Fitness(13) = 0.6457655841543484,

5. [01111=15]:Fitness(15) = -1.4258168372917488,

6. [01101=13]:Fitness(13) = 0.6457655841543484,

7. [01101=13]:Fitness(13) = 0.6457655841543484,

8. [01111=15]:Fitness(15) = -1.4258168372917488,

9. [00101=5]:Fitness(5) = 0.24971707521846975,

10. [00101=5]:Fitness(5) = 0.24971707521846975,

11. [01101=13]:Fitness(13) = 0.6457655841543484,

12. [01001=9]:Fitness(9) = -2.420583598064912,

13. [01110=14]:Fitness(14) = 0.12816206950567297,

14. [01110=14]:Fitness(14) = 0.12816206950567297,

15. [01110=14]:Fitness(14) = 0.12816206950567297,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 2

[

1. [01101=13]:Fitness(13) = 0.6457655841543484,

2. [00101=5]:Fitness(5) = 0.24971707521846975,

3. [00101=5]:Fitness(5) = 0.24971707521846975,

4. [00101=5]:Fitness(5) = 0.24971707521846975,

5. [11010=26]:Fitness(26) = 0.4989064653743698,

6. [11010=26]:Fitness(26) = 0.4989064653743698,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [01110=14]:Fitness(14) = 0.12816206950567297,

9. [01101=13]:Fitness(13) = 0.6457655841543484,

10. [01101=13]:Fitness(13) = 0.6457655841543484,

11. [11011=27]:Fitness(27) = -0.34550726204387483,

12. [11010=26]:Fitness(26) = 0.4989064653743698,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [01101=13]:Fitness(13) = 0.6457655841543484,

15. [01101=13]:Fitness(13) = 0.6457655841543484,

16. [01101=13]:Fitness(13) = 0.6457655841543484

]

Iteration 3

[

1. [01101=13]:Fitness(13) = 0.6457655841543484,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [01100=12]:Fitness(12) = 0.6118579239137365,

4. [01101=13]:Fitness(13) = 0.6457655841543484,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00010=2]:Fitness(2) = -0.5381057602120831,

7. [01101=13]:Fitness(13) = 0.6457655841543484,

8. [01101=13]:Fitness(13) = 0.6457655841543484,

9. [01101=13]:Fitness(13) = 0.6457655841543484,

10. [01101=13]:Fitness(13) = 0.6457655841543484,

11. [01101=13]:Fitness(13) = 0.6457655841543484,

12. [01101=13]:Fitness(13) = 0.6457655841543484,

13. [01111=15]:Fitness(15) = -1.4258168372917488,

14. [01101=13]:Fitness(13) = 0.6457655841543484,

15. [01101=13]:Fitness(13) = 0.6457655841543484,

16. [11001=25]:Fitness(25) = 0.6887388842154237

]

Iteration 4

[

1. [00111=7]:Fitness(7) = 0.5618431651128496,

2. [00101=5]:Fitness(5) = 0.24971707521846975,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [11101=29]:Fitness(29) = -1.378554509950062,

6. [10001=17]:Fitness(17) = -0.321808943374209,

7. [01101=13]:Fitness(13) = 0.6457655841543484,

8. [01101=13]:Fitness(13) = 0.6457655841543484,

9. [01101=13]:Fitness(13) = 0.6457655841543484,

10. [01101=13]:Fitness(13) = 0.6457655841543484,

11. [11001=25]:Fitness(25) = 0.6887388842154237,

12. [01101=13]:Fitness(13) = 0.6457655841543484,

13. [01101=13]:Fitness(13) = 0.6457655841543484,

14. [01101=13]:Fitness(13) = 0.6457655841543484,

15. [01110=14]:Fitness(14) = 0.12816206950567297,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 5

[

1. [01101=13]:Fitness(13) = 0.6457655841543484,

2. [01110=14]:Fitness(14) = 0.12816206950567297,

3. [01001=9]:Fitness(9) = -2.420583598064912,

4. [11101=29]:Fitness(29) = -1.378554509950062,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [01101=13]:Fitness(13) = 0.6457655841543484,

8. [01101=13]:Fitness(13) = 0.6457655841543484,

9. [01101=13]:Fitness(13) = 0.6457655841543484,

10. [01110=14]:Fitness(14) = 0.12816206950567297,

11. [01101=13]:Fitness(13) = 0.6457655841543484,

12. [01101=13]:Fitness(13) = 0.6457655841543484,

13. [10101=21]:Fitness(21) = -0.7934742966631891,

14. [00111=7]:Fitness(7) = 0.5618431651128496,

15. [11110=30]:Fitness(30) = 0.14345203853376642,

16. [11110=30]:Fitness(30) = 0.14345203853376642

]

Iteration 6

[

1. [01101=13]:Fitness(13) = 0.6457655841543484,

2. [01101=13]:Fitness(13) = 0.6457655841543484,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [01110=14]:Fitness(14) = 0.12816206950567297,

5. [01101=13]:Fitness(13) = 0.6457655841543484,

6. [01101=13]:Fitness(13) = 0.6457655841543484,

7. [00101=5]:Fitness(5) = 0.24971707521846975,

8. [01110=14]:Fitness(14) = 0.12816206950567297,

9. [01101=13]:Fitness(13) = 0.6457655841543484,

10. [01101=13]:Fitness(13) = 0.6457655841543484,

11. [01101=13]:Fitness(13) = 0.6457655841543484,

12. [01101=13]:Fitness(13) = 0.6457655841543484,

13. [01100=12]:Fitness(12) = 0.6118579239137365,

14. [01101=13]:Fitness(13) = 0.6457655841543484,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 7

[

1. [01101=13]:Fitness(13) = 0.6457655841543484,

2. [01101=13]:Fitness(13) = 0.6457655841543484,

3. [01110=14]:Fitness(14) = 0.12816206950567297,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [01000=8]:Fitness(8) = -0.15723881599186795,

6. [01101=13]:Fitness(13) = 0.6457655841543484,

7. [01101=13]:Fitness(13) = 0.6457655841543484,

8. [01101=13]:Fitness(13) = 0.6457655841543484,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [01100=12]:Fitness(12) = 0.6118579239137365,

13. [01110=14]:Fitness(14) = 0.12816206950567297,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [01101=13]:Fitness(13) = 0.6457655841543484,

16. [01101=13]:Fitness(13) = 0.6457655841543484

]

Iteration 8

[

1. [01101=13]:Fitness(13) = 0.6457655841543484,

2. [00101=5]:Fitness(5) = 0.24971707521846975,

3. [01101=13]:Fitness(13) = 0.6457655841543484,

4. [00111=7]:Fitness(7) = 0.5618431651128496,

5. [01111=15]:Fitness(15) = -1.4258168372917488,

6. [01101=13]:Fitness(13) = 0.6457655841543484,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [11110=30]:Fitness(30) = 0.14345203853376642,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00101=5]:Fitness(5) = 0.24971707521846975,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 9

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 10

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 11

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 12

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00010=2]:Fitness(2) = -0.5381057602120831,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [10110=22]:Fitness(22) = -10.147507370537783,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 13

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [10110=22]:Fitness(22) = -10.147507370537783,

4. [01110=14]:Fitness(14) = 0.12816206950567297,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 14

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00010=2]:Fitness(2) = -0.5381057602120831,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00100=4]:Fitness(4) = -1.0602870365038717,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 15

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [01110=14]:Fitness(14) = 0.12816206950567297,

11. [10010=18]:Fitness(18) = 0.5070083722695606,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 16

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00010=2]:Fitness(2) = -0.5381057602120831,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00111=7]:Fitness(7) = 0.5618431651128496,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 17

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [01110=14]:Fitness(14) = 0.12816206950567297,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [01110=14]:Fitness(14) = 0.12816206950567297,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 18

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [01110=14]:Fitness(14) = 0.12816206950567297,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00010=2]:Fitness(2) = -0.5381057602120831,

10. [00010=2]:Fitness(2) = -0.5381057602120831,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 19

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00010=2]:Fitness(2) = -0.5381057602120831,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 20

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00111=7]:Fitness(7) = 0.5618431651128496,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 21

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00100=4]:Fitness(4) = -1.0602870365038717,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 22

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00111=7]:Fitness(7) = 0.5618431651128496,

12. [00100=4]:Fitness(4) = -1.0602870365038717,

13. [10110=22]:Fitness(22) = -10.147507370537783,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 23

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00111=7]:Fitness(7) = 0.5618431651128496,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [01110=14]:Fitness(14) = 0.12816206950567297,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 24

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [01110=14]:Fitness(14) = 0.12816206950567297,

10. [00111=7]:Fitness(7) = 0.5618431651128496,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [10110=22]:Fitness(22) = -10.147507370537783,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 25

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00111=7]:Fitness(7) = 0.5618431651128496,

4. [10110=22]:Fitness(22) = -10.147507370537783,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [01110=14]:Fitness(14) = 0.12816206950567297,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00100=4]:Fitness(4) = -1.0602870365038717

]

Iteration 26

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 27

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00100=4]:Fitness(4) = -1.0602870365038717,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00111=7]:Fitness(7) = 0.5618431651128496,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 28

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [10110=22]:Fitness(22) = -10.147507370537783,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 29

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00101=5]:Fitness(5) = 0.24971707521846975,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [10110=22]:Fitness(22) = -10.147507370537783,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 30

[

1. [00100=4]:Fitness(4) = -1.0602870365038717,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 31

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00010=2]:Fitness(2) = -0.5381057602120831,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 32

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00100=4]:Fitness(4) = -1.0602870365038717,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00111=7]:Fitness(7) = 0.5618431651128496,

15. [00010=2]:Fitness(2) = -0.5381057602120831,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 33

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 34

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [01110=14]:Fitness(14) = 0.12816206950567297,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [01110=14]:Fitness(14) = 0.12816206950567297,

11. [00111=7]:Fitness(7) = 0.5618431651128496,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00010=2]:Fitness(2) = -0.5381057602120831,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 35

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00010=2]:Fitness(2) = -0.5381057602120831,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00111=7]:Fitness(7) = 0.5618431651128496,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [01100=12]:Fitness(12) = 0.6118579239137365,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 36

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [01110=14]:Fitness(14) = 0.12816206950567297,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00111=7]:Fitness(7) = 0.5618431651128496,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 37

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 38

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00010=2]:Fitness(2) = -0.5381057602120831,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 39

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00100=4]:Fitness(4) = -1.0602870365038717,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00100=4]:Fitness(4) = -1.0602870365038717,

12. [01110=14]:Fitness(14) = 0.12816206950567297,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [01110=14]:Fitness(14) = 0.12816206950567297,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 40

[

1. [00010=2]:Fitness(2) = -0.5381057602120831,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00010=2]:Fitness(2) = -0.5381057602120831,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00100=4]:Fitness(4) = -1.0602870365038717,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00001=1]:Fitness(1) = 0.4319786996724999,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00111=7]:Fitness(7) = 0.5618431651128496,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 41

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [01110=14]:Fitness(14) = 0.12816206950567297,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 42

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [10110=22]:Fitness(22) = -10.147507370537783,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00011=3]:Fitness(3) = -4.60442012739692,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 43

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00100=4]:Fitness(4) = -1.0602870365038717,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [01110=14]:Fitness(14) = 0.12816206950567297,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [01110=14]:Fitness(14) = 0.12816206950567297

]

Iteration 44

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [01110=14]:Fitness(14) = 0.12816206950567297,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [01110=14]:Fitness(14) = 0.12816206950567297,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [10110=22]:Fitness(22) = -10.147507370537783,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [10110=22]:Fitness(22) = -10.147507370537783,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 45

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 46

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00010=2]:Fitness(2) = -0.5381057602120831,

5. [00010=2]:Fitness(2) = -0.5381057602120831,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00100=4]:Fitness(4) = -1.0602870365038717,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 47

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [01110=14]:Fitness(14) = 0.12816206950567297,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 48

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00100=4]:Fitness(4) = -1.0602870365038717,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [01110=14]:Fitness(14) = 0.12816206950567297,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 49

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [01110=14]:Fitness(14) = 0.12816206950567297,

4. [00111=7]:Fitness(7) = 0.5618431651128496,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [10110=22]:Fitness(22) = -10.147507370537783

]

Iteration 50

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00100=4]:Fitness(4) = -1.0602870365038717,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 51

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00010=2]:Fitness(2) = -0.5381057602120831,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00010=2]:Fitness(2) = -0.5381057602120831,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 52

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [10110=22]:Fitness(22) = -10.147507370537783,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 53

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00010=2]:Fitness(2) = -0.5381057602120831,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 54

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [10010=18]:Fitness(18) = 0.5070083722695606,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 55

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00100=4]:Fitness(4) = -1.0602870365038717,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 56

[

1. [00111=7]:Fitness(7) = 0.5618431651128496,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00111=7]:Fitness(7) = 0.5618431651128496,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 57

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00111=7]:Fitness(7) = 0.5618431651128496,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 58

[

1. [01110=14]:Fitness(14) = 0.12816206950567297,

2. [10110=22]:Fitness(22) = -10.147507370537783,

3. [00100=4]:Fitness(4) = -1.0602870365038717,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00111=7]:Fitness(7) = 0.5618431651128496,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00010=2]:Fitness(2) = -0.5381057602120831,

16. [10010=18]:Fitness(18) = 0.5070083722695606

]

Iteration 59

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00100=4]:Fitness(4) = -1.0602870365038717,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 60

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 61

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00010=2]:Fitness(2) = -0.5381057602120831,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [10011=19]:Fitness(19) = 0.687483481144465

]

Iteration 62

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [10011=19]:Fitness(19) = 0.687483481144465,

8. [10011=19]:Fitness(19) = 0.687483481144465,

9. [00100=4]:Fitness(4) = -1.0602870365038717,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [10110=22]:Fitness(22) = -10.147507370537783,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 63

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00011=3]:Fitness(3) = -4.60442012739692,

8. [00011=3]:Fitness(3) = -4.60442012739692,

9. [00111=7]:Fitness(7) = 0.5618431651128496,

10. [00111=7]:Fitness(7) = 0.5618431651128496,

11. [00011=3]:Fitness(3) = -4.60442012739692,

12. [00011=3]:Fitness(3) = -4.60442012739692,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [01110=14]:Fitness(14) = 0.12816206950567297,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 64

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00010=2]:Fitness(2) = -0.5381057602120831,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 65

[

1. [00111=7]:Fitness(7) = 0.5618431651128496,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00100=4]:Fitness(4) = -1.0602870365038717,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 66

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00100=4]:Fitness(4) = -1.0602870365038717,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 67

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [10100=20]:Fitness(20) = 0.34222853857541,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 68

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [10110=22]:Fitness(22) = -10.147507370537783,

13. [10110=22]:Fitness(22) = -10.147507370537783,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 69

[

1. [10110=22]:Fitness(22) = -10.147507370537783,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [01110=14]:Fitness(14) = 0.12816206950567297,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 70

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00111=7]:Fitness(7) = 0.5618431651128496,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 71

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [01110=14]:Fitness(14) = 0.12816206950567297,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [01110=14]:Fitness(14) = 0.12816206950567297,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 72

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [01110=14]:Fitness(14) = 0.12816206950567297,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 73

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00111=7]:Fitness(7) = 0.5618431651128496,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [01110=14]:Fitness(14) = 0.12816206950567297,

11. [00111=7]:Fitness(7) = 0.5618431651128496,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 74

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [01110=14]:Fitness(14) = 0.12816206950567297,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00111=7]:Fitness(7) = 0.5618431651128496,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00010=2]:Fitness(2) = -0.5381057602120831,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 75

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [01110=14]:Fitness(14) = 0.12816206950567297

]

Iteration 76

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00010=2]:Fitness(2) = -0.5381057602120831,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 77

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00010=2]:Fitness(2) = -0.5381057602120831,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [01110=14]:Fitness(14) = 0.12816206950567297,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 78

[

1. [10110=22]:Fitness(22) = -10.147507370537783,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00100=4]:Fitness(4) = -1.0602870365038717,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [10110=22]:Fitness(22) = -10.147507370537783,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 79

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [10110=22]:Fitness(22) = -10.147507370537783,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [10110=22]:Fitness(22) = -10.147507370537783,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 80

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 81

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00010=2]:Fitness(2) = -0.5381057602120831,

6. [00010=2]:Fitness(2) = -0.5381057602120831,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 82

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00100=4]:Fitness(4) = -1.0602870365038717,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 83

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00111=7]:Fitness(7) = 0.5618431651128496,

9. [01110=14]:Fitness(14) = 0.12816206950567297,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [10110=22]:Fitness(22) = -10.147507370537783,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00100=4]:Fitness(4) = -1.0602870365038717

]

Iteration 84

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [01110=14]:Fitness(14) = 0.12816206950567297,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [10110=22]:Fitness(22) = -10.147507370537783,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [01110=14]:Fitness(14) = 0.12816206950567297

]

Iteration 85

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [01111=15]:Fitness(15) = -1.4258168372917488,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 86

[

1. [10110=22]:Fitness(22) = -10.147507370537783,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [10110=22]:Fitness(22) = -10.147507370537783,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [10110=22]:Fitness(22) = -10.147507370537783

]

Iteration 87

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00111=7]:Fitness(7) = 0.5618431651128496,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 88

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [01110=14]:Fitness(14) = 0.12816206950567297,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00010=2]:Fitness(2) = -0.5381057602120831,

11. [00100=4]:Fitness(4) = -1.0602870365038717,

12. [10110=22]:Fitness(22) = -10.147507370537783,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 89

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00010=2]:Fitness(2) = -0.5381057602120831,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00100=4]:Fitness(4) = -1.0602870365038717,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00010=2]:Fitness(2) = -0.5381057602120831,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00111=7]:Fitness(7) = 0.5618431651128496

]

Iteration 90

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00100=4]:Fitness(4) = -1.0602870365038717,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00100=4]:Fitness(4) = -1.0602870365038717

]

Iteration 91

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00100=4]:Fitness(4) = -1.0602870365038717,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00010=2]:Fitness(2) = -0.5381057602120831,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00010=2]:Fitness(2) = -0.5381057602120831,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 92

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00111=7]:Fitness(7) = 0.5618431651128496,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [01110=14]:Fitness(14) = 0.12816206950567297,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 93

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00100=4]:Fitness(4) = -1.0602870365038717,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00100=4]:Fitness(4) = -1.0602870365038717,

13. [00111=7]:Fitness(7) = 0.5618431651128496,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [01110=14]:Fitness(14) = 0.12816206950567297,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 94

[

1. [00100=4]:Fitness(4) = -1.0602870365038717,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [01110=14]:Fitness(14) = 0.12816206950567297,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00100=4]:Fitness(4) = -1.0602870365038717,

13. [00100=4]:Fitness(4) = -1.0602870365038717,

14. [00100=4]:Fitness(4) = -1.0602870365038717,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 95

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 96

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [01110=14]:Fitness(14) = 0.12816206950567297,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 97

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 98

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00010=2]:Fitness(2) = -0.5381057602120831,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 99

[

1. [00010=2]:Fitness(2) = -0.5381057602120831,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [10110=22]:Fitness(22) = -10.147507370537783,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [01110=14]:Fitness(14) = 0.12816206950567297,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 100

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [01110=14]:Fitness(14) = 0.12816206950567297,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 101

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00111=7]:Fitness(7) = 0.5618431651128496,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00100=4]:Fitness(4) = -1.0602870365038717,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [10110=22]:Fitness(22) = -10.147507370537783

]

Iteration 102

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [10111=23]:Fitness(23) = -0.7610685270493333,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00111=7]:Fitness(7) = 0.5618431651128496,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [10110=22]:Fitness(22) = -10.147507370537783,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [10110=22]:Fitness(22) = -10.147507370537783,

15. [00100=4]:Fitness(4) = -1.0602870365038717,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 103

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 104

[

1. [10110=22]:Fitness(22) = -10.147507370537783,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00111=7]:Fitness(7) = 0.5618431651128496,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00100=4]:Fitness(4) = -1.0602870365038717

]

Iteration 105

[

1. [10110=22]:Fitness(22) = -10.147507370537783,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00010=2]:Fitness(2) = -0.5381057602120831,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00100=4]:Fitness(4) = -1.0602870365038717,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00100=4]:Fitness(4) = -1.0602870365038717,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 106

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00100=4]:Fitness(4) = -1.0602870365038717,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00111=7]:Fitness(7) = 0.5618431651128496,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 107

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00100=4]:Fitness(4) = -1.0602870365038717,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 108

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00111=7]:Fitness(7) = 0.5618431651128496,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [10110=22]:Fitness(22) = -10.147507370537783,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 109

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00111=7]:Fitness(7) = 0.5618431651128496,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [01110=14]:Fitness(14) = 0.12816206950567297

]

Iteration 110

[

1. [00010=2]:Fitness(2) = -0.5381057602120831,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00100=4]:Fitness(4) = -1.0602870365038717,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 111

[

1. [00111=7]:Fitness(7) = 0.5618431651128496,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 112

[

1. [01110=14]:Fitness(14) = 0.12816206950567297,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00010=2]:Fitness(2) = -0.5381057602120831,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 113

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [01110=14]:Fitness(14) = 0.12816206950567297,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00111=7]:Fitness(7) = 0.5618431651128496,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00100=4]:Fitness(4) = -1.0602870365038717,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 114

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [10110=22]:Fitness(22) = -10.147507370537783,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [10110=22]:Fitness(22) = -10.147507370537783,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00011=3]:Fitness(3) = -4.60442012739692,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 115

[

1. [00110=6]:Fitness(6) = 0.6730313504125595,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00110=6]:Fitness(6) = 0.6730313504125595,

4. [10110=22]:Fitness(22) = -10.147507370537783,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [10110=22]:Fitness(22) = -10.147507370537783,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Iteration 116

[

1. [00000=0]:Fitness(0) = 0.6931471805599453,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00100=4]:Fitness(4) = -1.0602870365038717,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]

Best result by 116 iteration

[

1. [00000=0]:Fitness(0) = 0.6931471805599453,

2. [00110=6]:Fitness(6) = 0.6730313504125595,

3. [00100=4]:Fitness(4) = -1.0602870365038717,

4. [00110=6]:Fitness(6) = 0.6730313504125595,

5. [00110=6]:Fitness(6) = 0.6730313504125595,

6. [00110=6]:Fitness(6) = 0.6730313504125595,

7. [00110=6]:Fitness(6) = 0.6730313504125595,

8. [00110=6]:Fitness(6) = 0.6730313504125595,

9. [00110=6]:Fitness(6) = 0.6730313504125595,

10. [00110=6]:Fitness(6) = 0.6730313504125595,

11. [00110=6]:Fitness(6) = 0.6730313504125595,

12. [00110=6]:Fitness(6) = 0.6730313504125595,

13. [00110=6]:Fitness(6) = 0.6730313504125595,

14. [00110=6]:Fitness(6) = 0.6730313504125595,

15. [00110=6]:Fitness(6) = 0.6730313504125595,

16. [00110=6]:Fitness(6) = 0.6730313504125595

]