NEH Heuristics

v1.0

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Contents

Chapter 1

Class Index

1.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Chapter 2

Class Documentation

2.1 cFSS Class Reference

Public Member Functions

- cFSS (char *file)
  A constructor.
- ~cFSS ()
  A destructor.
- float Makespan (vector< int > Schedule)
  A normal member taking in the schedule and returning the makespan.
- int GetJobs ()
  Returns the number of jobs.
- float ** **GetProcessTime** ()
- int GetMachines ()
  Returns the number of machines.
- float **Max** (float, float)
- void **Initialize** ()

2.1.1 Detailed Description

Definition at line 7 of file FSS.h.

2.1.2 Constructor & Destructor Documentation

2.1.2.1 cFSS()

```
cFSS::cFSS (
            char * file )
```

A constructor.

Constructs the FSS class, and assigns the values.

Definition at line 7 of file FSS.cpp.

2.1.2.2 ~cFSS()

```
cFSS::~cFSS ( )
```

A destructor.

Clears the memory.

Definition at line 40 of file FSS.cpp.

2.1.3 Member Function Documentation

2.1.3.1 GetJobs()

```
int cFSS::GetJobs ( )
```

Returns the number of jobs.

Parameters

no	parameters

Returns

The number of jobs

Definition at line 57 of file FSS.cpp.

2.1.3.2 GetMachines()

```
int cFSS::GetMachines ( )
```

Returns the number of machines.

Parameters

no	parameters

Returns

The number of machines

Definition at line 52 of file FSS.cpp.

2.1.3.3 Makespan()

```
float cFSS::Makespan (
            vector< int > Schedule )
```

A normal member taking in the schedule and returning the makespan.

Parameters

the	schedule

Returns

The cost of the tours

Definition at line 62 of file FSS.cpp.

The documentation for this class was generated from the following files:

- C:/Users/Shane Vance/Desktop/src/FSS.h
- C:/Users/Shane Vance/Desktop/src/FSS.cpp

2.2 cFSSB Class Reference

Public Member Functions

- cFSSB (char *file)
  A constructor.
- ~cFSSB ()
  A destructor.
- float Makespan (vector< int > Schedule)
  A normal member taking in the schedule and returning the cost.
- int GetJobs ()
  Returns the number of jobs.
- float ** GetProcessTime ()
  Returns the number of machines.
- int **GetMachines** ()
- void **Initialize** ()

2.2.1 Detailed Description

Definition at line 8 of file FSSB.h.

2.2.2 Constructor & Destructor Documentation

2.2.2.1 cFSSB()

```
cFSSB::cFSSB (
            char * file )
```

A constructor.

Constructs the FSSB class, and assigns the values.

Definition at line 7 of file FSSB.cpp.

2.2.2.2 ∼cFSSB()

```
cFSSB::∼cFSSB ( )
```

A destructor.

Clears the memory.

Definition at line 40 of file FSSB.cpp.

2.2.3 Member Function Documentation

2.2.3.1 GetJobs()

```
int cFSSB::GetJobs ( )
```

Returns the number of jobs.

Parameters

no	parameters

Returns

The number of jobs

Definition at line 57 of file FSSB.cpp.

2.2.3.2 GetProcessTime()

```
float ** cFSSB::GetProcessTime ( )
```

Returns the number of machines.

Parameters

no	parameters

Returns

The number of machines

Definition at line 91 of file FSSB.cpp.

2.2.3.3 Makespan()

```
float cFSSB::Makespan (
            vector< int > Schedule )
```

A normal member taking in the schedule and returning the cost.

Parameters

A	flowshop schedule

Returns

The makespan value

Definition at line 62 of file FSSB.cpp.

The documentation for this class was generated from the following files:

- C:/Users/Shane Vance/Desktop/src/FSSB.h
- C:/Users/Shane Vance/Desktop/src/FSSB.cpp

2.3 cFSSNW Class Reference

Public Member Functions

- cFSSNW (char *file)
  A constructor.
- ~cFSSNW ()
  A destructor.
- float Makespan (vector< int > Schedule)
  A normal member taking in the schedule and returning the cost.
- int GetJobs ()
  Returns the number of jobs.
- float ** GetProcessTime ()
  Returns the number of machines.
- int **GetMachines** ()
- void **Initialize** ()

2.3.1 Detailed Description

Definition at line 8 of file FSSNW.h.

2.3.2 Constructor & Destructor Documentation

2.3.2.1 cFSSNW()

```
cFSSNW::cFSSNW (
            char * file )
```

A constructor.

Constructs the FSSNW class, and assigns the values.

Definition at line 7 of file FSSNW.cpp.

2.3.2.2 ~cFSSNW()

```
cFSSNW::~cFSSNW ( )
```

A destructor.

Clears the memory.

Definition at line 40 of file FSSNW.cpp.

2.3.3 Member Function Documentation

2.3.3.1 GetJobs()

```
int cFSSNW::GetJobs ( )
```

Returns the number of jobs.

Parameters

no	parameters

Returns

The number of jobs

Definition at line 57 of file FSSNW.cpp.

2.3.3.2 GetProcessTime()

```
float ** cFSSNW::GetProcessTime ( )
```

Returns the number of machines.

Parameters

no	parameters

Returns

The number of machines

Definition at line 101 of file FSSNW.cpp.

2.3.3.3 Makespan()

```
float cFSSNW::Makespan (
            vector< int > Schedule )
```

A normal member taking in the schedule and returning the cost.

Parameters

A	flowshop schedule

Returns

The makespan value

Definition at line 62 of file FSSNW.cpp.

The documentation for this class was generated from the following files:

- C:/Users/Shane Vance/Desktop/src/FSSNW.h
- C:/Users/Shane Vance/Desktop/src/FSSNW.cpp

2.4 Job Struct Reference

Public Member Functions

- **Job** (int num, int time)
- bool **operator**> (const Job &j) const

Public Attributes

- int **number**
- int **tTime**

2.4.1 Detailed Description

Definition at line 15 of file NEH.h.

The documentation for this struct was generated from the following file:

- C:/Users/Shane Vance/Desktop/src/NEH.h

2.5 NEH Class Reference

Public Member Functions

- NEH ()
- ∼NEH ()
- void FSSNEH (cFSS ∗FSS)
- void FSSBNEH (cFSSB ∗FSSB)
- void FSSNWNEH (cFSSNW ∗FSSNW)
- float GetBestMakespan ()
- void PrintBestSchedule (bool flag)

2.5.1 Detailed Description

Definition at line 26 of file NEH.h.

2.5.2 Constructor & Destructor Documentation

2.5.2.1 NEH()

```
NEH::NEH ( )
```

This is the default constructor the for the NEH heuristic class. NEH is regarded as the best constructive method for solving Flow-shop Scheduling. It is a permutation based heuristic relying on partial sequences for 2 or more jobs. It has very fast execution time.

Parameters

no	parameters

Definition at line 13 of file NEH.cpp.

2.5.2.2 ~NEH()

```
NEH::~NEH ( )  [default]
```

This is the default constructor for the NEH heuristic class.

Parameters

no	parameters

2.5.3 Member Function Documentation

2.5.3.1 FSSBNEH()

```
void NEH::FSSBNEH (
            cFSSB * FSSB )
```

This is a NEH heuristic algorithm that does not take into consideration tie-breaking for Flow-shop scheduling with blocking (FSSB). It runs very fast. This will output to the the console the result of the best found makespan for the job sequence.

Parameters

FSSB	this is the flow-shop with blocking scheduling class

Returns

no return

Initilaize our variables

Definition at line 162 of file NEH.cpp.

2.5.3.2 FSSNEH()

```
void NEH::FSSNEH (
            cFSS * FSS )
```

This is a NEH heuristic algorithm that takes into consideration tie-breaking for the Flow-shop scheduling (FSS) sequence. It runs very fast. This will output to the the console the result of the best found makespan for the job sequence.

Parameters

FSS	this is the flow-shop scheduling class

Returns

no return

Initilaize our variables

Definition at line 30 of file NEH.cpp.

2.5.3.3 FSSNWNEH()

```
void NEH::FSSNWNEH (
            cFSSNW * FSSNW )
```

This is a NEH heuristic algorithm that takes into consideration tie-breaking for Flow-shop scheduling with no-wait (FSSNW). It runs very fast. This will output to the the console the result of the best found makespan for the job sequence.

Parameters

FSSNW	this is the flow-shop with no-wait scheduling class

Returns

no return

Initilaize our variables

Definition at line 232 of file NEH.cpp.

2.5.3.4 GetBestMakespan()

```
float NEH::GetBestMakespan ( )
```

This will get the best makespan.

Parameters

no	parameter

Returns

the best makespan

Definition at line 376 of file NEH.cpp.

2.5.3.5 PrintBestSchedule()

```
void NEH::PrintBestSchedule (
            bool flag )
```

This will tell the NEH heuristic class whether to print the resulting best schedule or not.

Parameters

flag	whether to print the solution schedule or not

Returns

no return

Definition at line 363 of file NEH.cpp.

The documentation for this class was generated from the following files:

- C:/Users/Shane Vance/Desktop/src/NEH.h
- C:/Users/Shane Vance/Desktop/src/NEH.cpp