

FTypeGraph

```
+vector<pair<wstring, int>> arrRel
+map<pair<wstring, int>, int>
mapReversRel
+vector<double> arrNodeWeight
+vector<vector<pair<int, double>>>
fAdjList
+double dAnotherScore
+ vector<double> arrAnotherQuar
+ map<ETypeDisc, FDiscParams>
mapGraphDataTypeDisc
```

FormulaParser

```
/vector<string> arrToken
+string sInput
+any anyParams
-int i
+FormulaParser(string sInput, double
_dSumScore, int _iAmountDisc)
+double TakeResult(double _dLeft,
double _dRight, int _iPowerComp, int
_iPowerDisc)
-Expression Parse()
-string ParserToken()
-Expression UnaryExp()
-Expression BinaryExp(int iMinPriority)
-int iGetPriority(const string&
sOperation)
```

DSU

```
-int n
-int count
-vector<T> rank
-vector<T> pr
-vector<T> s
+DSU(int _n)
+int Find(int i)
+bool isSame(int l, int r)
+void Merge(int l, int r)
+int GetCount() const
```

FMetric

```
+shared_ptr<FTreeMetric> ptrTreeMetric
+shared_ptr<FCurricula> ptrCurricula
-vector<regex> arrRegexHeaderInd
-vector<regex> arrRegexHeaderComp
+FMetric(shared_ptr<FCurricula>
_ptrCurricula)
+Init()
+~FMetric()
+InitBalanceScore()
+InitBalanceScoreDFS(shared_ptr<FTree
Metric> th)
-Create()
-UpdateAnotherMetric
(shared_ptr<FTreeMetric>
ptrRootTree, set<vector<string>>&
setIsTakenScore, const vector<string>&
arrRectUpdate, const double& dScore)
```

FDiscParams

```
+int iAmount
+double dCredits
```

FGraph

```
-shared_ptr<FCurricula> ptrTree
+map<ETypeGraph, FTypeGraph>
mapGraph
+FGraph(shared_ptr<FCurricula>
_ptrTree)
+Create()
+CreateAfter()
+CalcAllScoreAndAmount(FTypeGraph&
fGraph)
+CalcAnother(double& dResult, int&
iComponent, const
vector<vector<pair<int, double>>>&
fCurrentAdj)
+CalculateCluster(double& dResult, const
vector<vector<pair<int, double>>>&
fAdjList)
+void CalculateMST(double&
dResult, const
vector<vector<pair<int, double>>>&
fCurrentAdj, auto cmp)
-GenerateAnotherGraph()
-CountAllMetric(const ETypeGraph&
eTypeGraph)
-CountAfterAllMetric(const ETypeGraph&
eTypeGraph)
-shared_ptr<FTreeElement>
GetGraphDisc(const wstring& wsKey)
```

FTreeMetric

```
+bool bAllow
+bool bNoIgnore
+double dSumScore
+map<int, double> mapCourseScore
+string sName
+wstring wsIndexName
+shared_ptr<FTreeElement> ptrParent
+vector<shared_ptr<FTreeElement>>
arrChild
+map<string, vector<string>> mapComp
+ETypeDisc eTypeDisc
+set<ETagDisc> setTagDisc
+FTreeElement()
```

FSolveSecondPage

```
-shared_ptr<FGlobal> ptrGlobal
+FSolveSecondPage(shared_ptr<FGlobal>
_ptrGlobal)
+AddDiscScore(const XLWorksheet&
fSheet, int iKeyPageNumber)
+double
DFSCountingScore(shared_ptr<FTreeEle
ment> ptrThis)
```

FGraphAllData

```
-shared_ptr<FGlobal> ptrGlobal
+map<ETypeGraph, vector<double>>
mapGraphQuarAllWeigth
+FGraphAllData(shared_ptr<FGlobal>
_ptrGlobal)
```

FCurricula

```
+shared_ptr<FGlobal> ptrGlobal
+map<wstring, wstring>
mapNameToIndexDisc
+string sAnotherName
+int iYearStart
+int iCodeUGSN
+int iAmountCourse
+vector<map<ETypeDisc, FDiscParams>>
mapETMTypeDisc
+shared_ptr<FGraph> ptrGraph
+set<string> setAllComp
+map<wstring,
shared_ptr<FTreeElement>>
mapAnotherDisc
+shared_ptr<FMetric> ptrMetric
+shared_ptr<FTreeElement> ptrRoot
+FCurricula(shared_ptr<FGlobal>
_ptrGlobal)
+CountDisc()
+~FSolve()
-DeleteDFS(shared_ptr<FTreeElement>
ptrThis)
-GetMapNoIgnoreDisc(map<wstring,
shared_ptr<FTreeElement>>&
mapDiscReturn, bool IsNecessaryAllow,
bool IsNecessaryNotIgnore)
```

FTreeElement

```
+string sName
+int iAmountUsingDisc
+double dNoBalanceSum
+double dBalanceSum
+double dChosenSum
+double dInclusionPercent
+map<string, shared_ptr<FTreeMetric>>
mapChild
+shared_ptr<FTreeMetric> ptrParent
+shared_ptr<FMetric> ptrMetric
+shared_ptr<FCurricula> ptrCurricula
+FTreeMetric(shared_ptr<FMetric>
_ptrMetric, shared_ptr<FCurricula>
_ptrCurricula)
+Delete()
+DeleteDFS(shared_ptr<FTreeMetric>
th)
+InitAnotherScore()
+InitAnotherScoreDFS(shared_ptr<FTree
Metric> th)
```

FSolve

```
-shared_ptr<FGlobal> ptrGlobal
+int N
+int iCurrentPage
+int iCurrentRow
+bool blsCorrectParsing
+set<string> setHeaderComp
-unique_ptr<FSolveSecondPage>
ptrSolveSecondPage
+unique_ptr<FGraphAllData>
ptrGraphAllData
-vector<regex> arrRegexAnother
-vector<shared_ptr<FCurricula>>
arrDisc
+FSolve(shared_ptr<FGlobal> _ptrGlobal)
+bool Init()
+~FSolve()
+bool Create(string sInPath, string
sNamePlan)
+CreateAllGraph()
+CreateAllMetric()
+shared_ptr<FCurricula> GetCurricula(int
iNum)
-ClearCurricula()
-ZeroPageCreateDiscTree(const
XLWorksheet& fSheet, int
iKeyPageNumber)
-FirstPageAddCompIndicator(const
XLWorksheet& fSheet, int
iKeyPageNumber)
-ThirdPageFindTypePlan(const
XLWorksheet& fSheet, int
iKeyPageNumber)
```

FAdapOutData

```
-shared_ptr<FGlobal> ptrGlobal
+FAdapOutData(FTotalData
+map<ETypeGraph, FDataType>
mapGraphData
+vector<map<string, FDataType>>
arrMapCompTreeData
+vector<map<ETypeGraph,
pair<FDataType, FDataType>>>
arrMapGephiCSVData
+FAdapOutData(shared_ptr<FGlobal>
_ptrGlobal)
+bool Init()
+Create()
+~FOutData()
-CreateAnotherHeader()
-CreateAnotherData()
-CreateType(FDataType& fData)
-CalcDataCorridor
(vector<vector<FTableData>>& arrDataCo
rridor, const vector<vector<any>>&
arrData, const int& iCol, const string&
sType)
-string AddCompString(const map<string,
vector<string>>& mapComp, bool
blsBrache)
-int CreateCompTreeData(const int& w,
vector<vector<any>>& arrReturnData,
shared_ptr<FTreeMetric> ptrMetric)
```

FGlobal

```
-shared_ptr<FGlobal> ptrThis
/const double dNoInit
/const double dINF
-wstring_convert fConverterToString2
-map<char, char> mapFirstUnicRU
-map<char, char> mapLastUnicRU
-map<char, char> mapTranslit
+shared_ptr<FConfig> ptrConfig
+shared_ptr<FError> ptrError
+shared_ptr<FSolve> ptrSolve
+shared_ptr<FOutData> ptrOutData
+shared_ptr<FAdapOutData>
ptrAdapOutData
-string sNameFileConfig
+FGlobal(wstring wsNameConfig)
+bool Init(shared_ptr<FGlobal> _ptrThis)
+~FGlobal()
+ClearFile(const string& sPath)
+ConvertPathFormat(string sFileName,
bool bRename) const
+string ConvertToString(wstring wsData)
+path GetCurrentPath() const
+string GetValue(const XLCell& cell)
GetValue(const XLCell& cell)
+bool IsThatIsTrue(string sData) const
+vector<any> SetMapParams(const
XLWorksheet& fPage, int iSize)
+TakeData(any, const XLRow& row)
```

FDataType

```
+vector<string> arrHeader
+vector<int> arrIsOut
+vector<string> arrType
+vector<vector<any>> arrData
+vector<vector<FTableData>>
arrDataCorridor
```

FTableData

```
+any fData
+int iAddInfo
+FTableData()
```

FOutData

```
-shared_ptr<FGlobal> ptrGlobal
-string sOutPath
-vector<int> arrIsOutCorridor
-vector<string> arrNameCorridor
+FOutData(shared_ptr<FGlobal>
_ptrGlobal)
+bool Init()
+~FOutData()
+Create(string _sOutPath)
-OutTotalData()
-OutLocalData()
-OutLocalGephiCSVData()
-OutTable(const int& iYShift, const int&
iXShift, const bool&
blsOutHeader, FDataType fData, const
bool& blsOutCorridor, XLWorksheet*
WKS, const string&
sNameDataCSVStream)
-OutDataCeil(const int& y, const int&
x, XLWorksheet& WKS, const any& fData)
-string ConvertAnyToString(const any&
fData)
```

FConfig

```
-shared_ptr<FGlobal> ptrGlobal
-vector<FPageInfo> arrKeyPage
-vector<string> arrRegex
+map<wstring, shared_ptr<any>>
mapAnyParamsReadKey
-any anyData
+FConfig(shared_ptr<FGlobal>
_ptrGlobal)
+bool Init()
+~FConfig()
+const any& GetData() const
-void InitAnyMap()
-bool SetParams(XLWorkbook& fBook,
wstring wsKey, XLRow row)
```

FError

```
-shared_ptr<FGlobal> ptrGlobal
-bool blsPrintError
+map<pair<wstring, string>, wstring>
mapIndexDiscWithoutTag
+set<string> setBadRegexName
/const string sNotAnother
+FError(shared_ptr<FGlobal> _ptrGlobal)
+bool Init()
+~FError()
+ErrorBadParser() const
+ErrorAnother() const
+OKParsing() const
+WAParsing() const
```

FPageInfo

```
+wstring wsName
+string sName
+vector<set<wstring>> arrHeader
```

FTranslateData

```
-wstring wsName
-vector<int> arrFlag
+wstring GetName() const
+bool GetTotal() const
```