# 0. 기능

## vslot-simulator

simulator property(excel file)를 넣고 실행해서

simulator 지급률(payout rate),승률...을 보여준다.

# 

# 1. setting:

* + **환경:**

JDK- 1.8.0\_152

apache-tomcat-8.0.47

큰 버전만 맞추면 될것 같다.

* + **download from git:**

<http://git.wdfall.com:8070/vSlot-Simulator.git>

* + **maven:**

Maven >> Update Project

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Error configuring application listener of class org.springframework.web.context.ContextLoaderListener /docs/9\_setting/9\_problems 참고

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* + **lombok 설정:**

{user home dir}\.m2\repository\org\projectlombok\lombok\1.16.18\lombok-1.16.18.jar 실행

혹은 download해서 실행

* + **build:**

Project >> clean

* + **tomcat server 설정--v8.0**

Modules >>Edit>>Path>> /

auto reloading disable(권장)

* + **db 설정(local db):**

mysql local instance에 database: **vslot\_simulator** 만든다.

/docs/1\_databaes/1\_schema.sql를 실행해서 table만든다.

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/src/main/resources/system.properties

db.url=jdbc:mysql://**192.168.1.55:3306**/**vslot\_simulator**?useUnicode=true&characterEncoding=UTF-8

db.username=root

db.password=root

-------------

관련 ip,port,username,password 변경.

* + **페이지 방문**

tomcat run

<http://localhost:8080>

main, list, detail 3층 페이지 구조

* + **resource**

web page:

bootsrap3 theme 사용 sb-admin2

<https://github.com/BlackrockDigital/startbootstrap-sb-admin-2.git>

class diagram plugin:

http://www.objectaid.com/installation

# 2. project 구조:

v vSl-Ot•Simulator BSIct-SimuIator 
Deqriptor Simulator 
P Wing Elements 
'AX-WS Web 
v Java 
" vc/main/java 
com-wd 
bueness 
mod el 
rungame 
spring 
spring 
*cmc.1094j2vopetties 
"tempropetties 
vc/tesl.he«wrces 
JavaScript Resources 
Resources 
docs 
Opcduct 
1 _databae 
g_Settirvg 
readrne.txt 
blogs 
W ontent 
WEB-INF 
views 
web 
favicon.ico 
@ dependency ed -pom,xml 
pom_xml 

src/main/java ---source code

src/test/java --- test code

src/main/resources --- setting

docs --- 문서관련

docs /0\_product는 shell 실행 folder--- desktop으로 실행(사용안함)

--->web으로 실행하기로 함.

target--- build할때 사용됨

WebContent--- web page

pom.xml --- maven setting

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src/main/java

buisiness: slot,bonus,freespin 관련

model: dao,service,…

rungame: simulator 실행 관련

spring: spring framework

web.controller: controller

src/test/java

test: test관련

src/main/resources

queries: mybatis sql file

spring: spring setting

….

# 3. simulator 실행 시작점

list페이지 Run Simulator>> excel upload... >> 실행

## 3.1 view --> controller

stage, type 마다 simulator 하나를 실행할수 있다.

list.jsp

--> inc-run-game-component-ui.jsp, inc-run-game-component-js.jsp

--> RunGameComponent

--> RunGameController

--> /ajax/run/{stage}/{type}/runSimulator

## 3.2 controller

<<Java 
@RunGan-pController 
*log Logger 
o runSimulatU(MuItipartHttpSerUetRecpest.RunGameStage.RunGameType.String).ModelAndView 
o reset(HttpSerUetRewest.RunGameStage 
—runGameSerüceProüder 0 . 1 
<<Java 
RunGarreServiceProvider 
*log Logger 
A apeicationContext ApßicaticoCcntext 
a invalidStageAndTypeList: List<String> 
getRunGameSeQce(RunGameStage, RunGameType): IF RunGameServifE 
initlnvalidStageAndTypeList(): nid 
islnVaIidStageAndType(RunGameStage, 
a createSerücelnstance(RunGameStage, 
a createRunnednstance(RunGameStage, 
getKeyString(RunGameStage, 
@BasicRunGarrp Service 
com.wdfall.slotrungame.service 
o sheetName: String 
o getSheetName() String 
o void 
o getRunnerO.AbstractRun<?, ? , 
o setRunner(AbstractRun<?, ? , void 
o toString(). String 
-runner 0..1 
<<Java 
*log Logger 
o clazzResult: 
o clazzTask: Class<T> 
o clazzlnpJtVO. Class<lV> 
o clazzResuItVO Class<RV> 
o File 
o sheetName: String 
o usemame String 
o u*ilelnty IJÉilelnt 
o currentStage RunGameStage 
o currentType: RunGameType 
o loader IFPropertyLoader 
o loadecOata: PropertyDataMap 
lyoperty: p 
basicSimulator: 
o slotSerüceProüder: SlotSeniceProüder 
o slotSerüce• 
o inputVO IV 
'AbstractRun() 
void 
-servicePod 0. 
<<Java 
O IFRunGan-p Service 
com.wdfall.slotrungame.service 
o getProgess(). RunGameProgess 
o runSimuIator(FiIe IJpFileln6, String): void 
getSheetName():String 
<<Java 
Stage01FreespinRun 
com.wdfall.slotrungame.@ames 
V log Logger 
& Stage01FreesÉnRun() 
O initStageAndTypeO. 
parsePropeny(): void 
<<Java 
@BasicSimulatorRun 
S' log Logger 
parseProperty() void 
o insertResultToDb{). void 
o setFile(File) void 
o setSheetName(String): void 
o setlJsemame(String). void 
a init() void 
initStageA ndTypeO: void 
o insertlnpJtTcOb{) void 
c'pars ePropeHy() : voyd 
c" ins edResu/tToDbO : void 
<<Java 
StageO 1 SimulatorRun 
v log Logger 
& Stage01SimulatorRun() 
parseProperty()• Wd 
o insertResultTcObO. Wd 
<<Java Class>> 
@Stage01BonusRun 
scflog Logger 
& Stage0180nusRun() 
o initStageAndTypeO:void 
parsePropertyO: void 
o insertResultTcOb{). void 
-gogess 0..1 
<<Java Class>> 
@RunGan-pProgress 
o statue RunGameStatus 
a doneTask• long 
a totalTask. long 
o clear(). void 
o getStatus(). RunGameStatus 
e setDoneTask(Iong). vod 
o getTotalTask(). long 
o setTotalTask(Icng). vod 

## 3.3 AbstractRun

<<Java Class" 
*log Logger 
o clazzResult: Class<R> 
o clazzTask: Class<T> 
o clazzlnpJtVO: 
o clazzResultVO• Class<RV> 
o File 
o sheetName: String 
o usemame: String 
o u*ilelnt• 
o currentStage: RunGameStage 
o currentType RunGameType 
p.ogess: RunGameProgess 
o loader IFPropenyLoader 
o loadecOata: PropertyDataMap 
o slotSeniceProüder: SlotSerüceProüder 
o inputVO IV 
o setFile(File). Wd 
e setSheetName(String)• void 
o setlJsemame(String)• void 
a init(): void 
drunMain(). Wd 
initStageA nd Typef) : void 
a loafxcelData()• void 
o insertlnpJtTcOb{): void 
('pars ePropeHyf) : void 
o runo void 
cfinseHResu/tToDbO:vo'd 
#slotSerüce 0..1 
<<Java 
OlFSlotService<l,R> 
o insertlnput(l) void 
<<Java 
@SimulatorService 
*log Logger 
& SimulatorSerüce() 
#basicSimuIator 
<<Java Class>> 
@BasicSimulator<P,R,T> 
com.wdfaILslotbusiness_simulatortramework 
*log Logger 
A taskClazz Class<T> 
A totalResultClazz Class<R> 
lyogess: RunGameProgess 
o getTotalResult() 
Class<T>) 
o runTest(): nid 
otalResult 
—dao 0..1 
<<Java 
@SimulatorDAO 
com.wdfalLsIotmodeLdao 
A "Session: "Session 
# NS. String 
& SimulatorDAO() 
o insertlnpJt(Simulatc-dnpJtVO): void 
o insertResult(SimuIatorResultVO): void 
<<Java 
com.wdfall.slotbusiness_simulatofframework 
V log Logger 
øayGameCcunt long 
o tota18et: 'cog 
o winPaycut: long 
o winGameCount. 'cog 
append(8asicResult): void 
o getTota18et() long 
o ØntTotalResult(). void 
<<Java 
AccEmulateResult 
com_wdfall.slotbusinesssimulator.result 
V log Logger 
*yLineCcunt: Y.g 
o winLineCount: long 
o winLinePaycut: long 
øayScatterCcunt: lc-ng 
o winScatterCount long 
o winScatterPayout Icog 
o winScatter80nusCount: 'cog 
o winScatter80nusPaycut: long 
o winScatterFreesÉnCcunt: long 
o winScatterFreesÉnPaycut: long 
append(EmulateResuIt): void 
o getWinLineRate(). douBe 
o getPayoutRate()• doube 
o getScatterPayoutRateO. douBe 
o getWinScatter80nusRate()• doube 
o getWinScatterFreesÉnRate()• douBe 
o getTota18et(). long 
o getWinPayæt(). long 
o getPlayScatterCænt(). 'cog 
o getWinScatterCount(). long 
o getWinScatterPayout() long 
o ØntTotalResult() void 
AbstractBasicTask<P, 
gogess: RunGameProgess 
'Abstract8asicTask() 
#gopert 
o selectResultList(RunGameStage):List<R> 
e selectResultDetail(int) 
11 
@BasicProperty 
<<Java 
@BasicSimulatorTask 
&8asicSimulatorTaskO 
<<Java 
@EmulatorSlot 
com_wdfall.slotbusiness.simulator 
gameProperties: GameProperty 
a ds*yCreator: IFDisøayCreator 
a winnin$inder IFWinnin$inder 
com.wdfaILslotbusiness_simulatofframework 
øayThreadCount: int 
o int 
o gayGameCcunt: Y.g 
int 
o getPlayGameCcunt(). long 
o setPIayThreadCount(int): mid 
o setPIayGameCount(long) Wd 
o hashCode():int 
o toString() String 
a winnin$alculatcr: AbstractWinningCalculatc-r 
a senResult. Snapshot 
a result: EmulateResult 
'EmulatorSlot() 
o setWinningCalculator(AbstractWinnin$alculator): void 
o sÉn(). EmulateResult 
o toStrin<) String 

## 3.4 EmulatorSlot

<<Java 
*log Logger 
o øayLineCcunt: 'cog 
o winLineCount: long 
o winLinePaycut: long 
o øayScatterCcont: lc-ng 
o winScatterCcunt• long 
o winScatterPaycut. long 
o winScatter80nusCount: long 
o winScatterBcnusPayc•Jt: long 
o winScatterFreesÉnCænt: long 
o winScatterFreesÉnPayout: 'cog 
o getWinLineRateO doube 
o getWinScatterRate(). doube 
o getPayoutRate()• douBe 
getScatterPayoutRateO. douBe 
o getWinScatter8cousRate(). doube 
o getWinScatterFreesÉnRate() doube 
getScatterFreesÉnPaycutRate(). doube 
o getPIayLineCount(). long 
o getWinScatterPayoutO long 
e ØntTotalResu't(). void 
<<Java 
@EmulateResult 
com.wdfalLslotbusiness_simulator.result 
S' log Logger 
o winnin*atterns: 
winning_ines: 
o winningScatters: 
payout long 
o linePaycut long 
o scatterPayout: long 
o scatter8cousPaycut: long 
a scatterFreesÉnPaycut: long 
'EmulateResuIt() 
o getWinnin$esults() 
getScatter8cnusPayout(). long 
getScatterFreesÉnPayout(). long 
-v.qnmn 
Its 0..* 
<<Java 
@WnningResult 
<<Java 
@WnningFinder 
m.wdfall_slotbus iness imulatorfinder 
SOF I ogger 
innin$inder() 
setProperty(GameProperty): void 
-symbdFactory 
<<Java 
@EmulatorSymbolFactory 
com.wdfall_slotbusiness.simulator.factories 
V log 
a symbol Map<String, Emulatc-rSymbc-l> 
*EmulatorSy 
Factory() 
o setProperty(Gam roperty)• Eid 
rty 
ymbol 
createSymbolFromSymbolDefn 
y mbd 
<<Java 
@ReelSymbolSelector 
com.wdfall_slotbusiness.simulatorfactories 
o select(Emulatc-rReelProperty int): 
-iwipnin$inder 1 
<<Java 
OlFWnningFinder 
com.wdtall_slotbusiness.simulatorfnder 
-proper 
<<Java 
@EmulatorSlot 
com.wdfall_slotbusiness.simulator 
'EmulatorSlot() 
o setWinnin$alculatc-r(AbstractWinnin$alculatc-r)• Wid 
o sÉn() EmulateResult 
o getSÉnResu't(i Snapshot 
o toString():String 
*Qinnin$alculatc-r 0. 1 
AbstractWin ningCalculator 
'AbstractWinningCalculator() 
< EmulatorWynningPattemRes : List< WinnhgRes 
<<Java 
@WnningCalculator 
*log Logger 
& WinningCalculator() 
o Winnin$esult 
o long 
-gamePropenies 0..1 #goperty 
@Gan-pProperty 
#sÉnResu 
#Result 0..1 
<<Java 
@Snapshot 
<<Java 
@DisplayCreator 
o createReels()•Snapshot 
-symbdSelectc-r 0..1 
OlFReelSymbolSelector 
com.wdfall.slotbusiness.simulator_factories 
o select(EmulatuReelProperty, orSymbol> 
-dsøayCré 
<<Java 
OlFDisplayCreator 
o createReels()•Snapshot 
com.wdfalLslotbusiness.simulatorfnder 
o symbdld String 
a count. int 
payout' int 
o hittedSymbols: 
o multiße: douBe 
patterrr PattemType 
o getPattemO PattemType 
o setSymbdld(String)• wid 
o equals(ObJect) boolean 
o canEwal(Object) boolean 
o hashCode():int 
& Winnin$esult() 
o øayReels: 
o toStringO:String 
o equals(Object) boolean 
o canEcpal(ObJect). boolean 
o hashCode(). int 
& Snapshot() 
0.1 
goundScale: into 
o reelProperties. EmulatorReelPropeny[] 
o winnin*atterns: 
o symbolDeineMapWrapper Symbc-lDefneMapWrapper 
o addSymbolDefne(SymbdDefne) void 
getPayætTaBe(). SimulatorPayoutPropertyTabe 
o setPayætTaBe(Simulatc-rPayoutPropertyTaBe)• Eid 
getScatterSymbo-lCodes()• List<String> 
o setReeIProperty(int EmulatorReelProperty): Wd 
o ccuntWinLines(). int 
o getTota18etO•int 
getReelPropertiesO EmulatorReelProperty[l 
o toString(). String 
'Gameproperty() 
eProperties 

# 

# 

## 3.5 excel

<<Java 
@GanpPropertyProvider 
'Gamepropertyproüder() 
o parse(PropertyDataMap)•GameProperty 
parseDataltemSimulatc-rSetting(PropenyDataMap, GamePropertyParam): void 
parseDataltemGroudScale(PropertyDataMap GamePropertyParam): void 
parseDataltemFirstPayoutsSymbdCænt(PropertyDataMap, GamePropertyParam): wid 
parseDataltemSymbc-lDeineParamList(PropertyDataMap, GamePropertyParam): Wd 
generateSymbdDefneParam(int TwoDimensionList, int): SymbolDefneParam 
parseDataltemReelPropertiesParamList(PropertyDataMap, GamePropertyParam): vod 
o Integer> 
parseDataltemWinLinePattemParamList(PropertyDataMap, GamePropertyParam): void 
o generateLinePattem(String)•List<lnteger> 
<<Java 
OlFPropertyProvider 
o parse(PropenyDataMap) BasicProperty 
<<Java 
OlFGarrpPropertyProvider 
@Stage01BonusPropertyProvider 
com.wdtall.slotbusiness.simulator]oader.provider 
& Stage01Bc-nusPropertyProüder() 
a Object> 
a parseWheelPieceList(PropertyDataMap).List<WheelPiece> 
OlFBonusPropertyProvider 
e parse(PropertyDataMap):8asicProperty 
<<Java 
@ExcelPropertyLoader 
o load(File, String). PropertyDataMap 
OlFPropertyLoader 
e loa$ile, String): PropertyDataMap 
<<Java Class>> 
@GamEPropertyParam 
getGroundScale() into 
getReelPropertiesParamList()• Integer>> 
o getWinLinePattemParamList(). 
o setPIayThreaCount(int): Wd 
o void 
o setReelPropertiesParamList(List<Map<String void 
o void 
o equals(ObJect). boolean 
o canEcpal(Object) bodean 
e hashCode(). int 
o toString() String 
<<Java Class>> 
GarnePropertyBuilder 
.åhakeGamePropertiesFromParam(GamePropertyParam): GameProperty 
<<Java 
@GarrpProperty 
o wid 
o addSymbolDeine(SymbdDeine) void 
getPayoutTabe() Simulatc-rPayoutPropertyTaBe 
o hasWiIdSymbolld() boolean 
List<String> 
o setReelProperty(int EmulatorReelProperty): Eid 
o addWinLine(WinLinePattem) void 
getReelPropertiesO• Emulatc-rReelPropeny[] 
getSy mbdDe fneMapW rapper(). SymbolDe fneMapW rapper 
o setSymbolDefneMapWrapper(SymbdDefneMapWrapper): 
o toString(Y String 
'Gameproperty() 

# 

# 4. excel property 설명

## 위치:

sample: /docs/0\_product/input/\*.xlsx

## 

## excel name:

vslot\_param\_basic.xlsx

vslot\_param\_stage01.xlsx

….

## excel sheet name:

simulator, bonus, freespin 소문자로

com.wdfall.slot.rungame.RunGameType 이름의 소문자와 같음.

## 형식:

|  |  |  |
| --- | --- | --- |
| {{simulatorSetting}} |  |  |
| **스레드 개수** | **스레드 pool 크기** | **게임진행횟수** |
| 1 | 1 | 1,000,000 |
| {{//simulatorSetting}} |  |  |

{{simulatorSetting}}, {{//simulatorSetting}}

header, data

simulatorSetting은 excel parsing할때 사용.---(GamePropertyProvider.parseDataItemSimulatorSetting ...)

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## 기본 property 설명:

simulatorSetting--- simulator 설정

groundScale --릴당 개수, 릴 slot 구성

firstPayoutSymbolCount --- pay table에서 max 매칭 심블수

symbolDefineParamList --- payout table, 심블 정의

reelPropertiesParamList---심블 출현 빈도, 릴 심블 구성

winLinePatternParamList---line pattern 정의

……

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# 

# 5. test

## simulator 실행 local test

RunGameMain.java

Arguments:         ./docs/0\_product/input/vslot\_param\_basic.xlsx basic simulator wind

설명: filepath, stage, type, username

## web page 직접 test: list 페이지

## test코드

longtime: simulator 실행 test

shorttime: unit test

# 6. simulator stage01 추가시 개발할것

## <<1. web page: >>

main.jsp

STAGE01추가

## <<2. java>>

RunGameConstants.RunGameStage에 STAGE01 추가.

com.wdfall.slot.rungame.games 아래에

Stage01SimulatorRun.java

Stage01BonusRun.java

Stage01FreespinRun.java

## <<2.1 Stage01SimulatorRun >>

public class Stage01SimulatorRun extends AbstractRun

<Stage01GameProperty, AccEmulateResult, Stage01SimulatorTask,SimulatorInputVO, SimulatorResultVO>

>> Stage01GameProperty ---> Stage01GamePropertyProvider

>> AccEmulateResult :

>> Stage01SimulatorTask --->

public class Stage01SimulatorTask extends AbstractBasicTask<Stage01GameProperty, AccEmulateResult>