



BLOCKCHAIN INTEGRATED RPG GAME

UNDERGRADUATE FINAL PROJECT
Submitted as one of the requirements to obtain
Sarjana Komputer

By: Bagja Satyanugraha
012201905035

COMPUTING FACULTY
CIKARANG
JANUARY, 2023

BLOCKCHAIN INTEGRATED RPG GAME

Disusun oleh:

Bagja Satyanugraha

Disetujui oleh:



Dr. Tjong Wan Sen, ST, MT
Pembimbing Skripsi



Ronny Juwono, M.T.
Ketua Program Studi Sistem Informasi



Rila Mandala, Ph.D
Dekan Fakultas Komputer

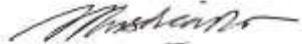
PANEL OF EXAMINER APPROVAL

The Panel of Examiners declare that the undergraduate thesis entitled
BLOCKCHAIN INTEGRATED RPG GAME
that was submitted by Bagja Satyanugraha majoring in Information System from the
computing was assessed and approved to have passed the Oral Examination on 27
January 2023

Panel of Examiner



.....
Abdul Ghofir, S.Kom., M.Kom.



.....
Rusdianto Roestam MSc., PhD.

STATEMENT OF ORIGINALITY

In my capacity as an active student of President University and as the author of the thesis/final project/business plan (underline that applies) stated below:

Name : BAGJA SATYANUGRAHA
Student ID number : 012201905035
Study Program : Information System
Faculty : Computing

I hereby declare that my thesis/final project/business plan entitled "**BLOCKCHAIN INTEGRATED RPG GAME**" is to the best of my knowledge and belief, an original piece of work based on sound academic principles. If there is any plagiarism detected in this thesis/final project/business plan, I am willing to be personally responsible for the consequences of these acts of plagiarism, and will accept the sanctions against these acts in accordance with the rulesand policies of President University.

I also declare that this work, either in whole or in part, has not been submitted to another university to obtain a degree.

Cikarang, 13 Maret 2023



(Bagja Satyanugraha)

SCIENTIFIC PUBLICATION APPROVAL FOR ACADEMIC INTEREST

As a student of the President University, I, the undersigned:

Name : Bagja Satyanugraha

Student ID number : 012201905035

Study program : Information System

for the purpose of development of science and technology, certify, and approve to give President University a non-exclusive royalty-free right upon my final report with the title:

“BLOCKCHAIN INTEGRATED RPG GAME”

With this non-exclusive royalty-free right, President University is entitled to converse, to convert, to manage in a database, to maintain, and to publish my final report. There are to be done with the obligation from President University to mention my name as the copyright owner of my final report.

This statement I made in truth.

Cikarang, February



(Bagja Satyanugraha)

ADVISOR'S APPROVAL FOR PUBLICATION

As a lecturer of the President University, I, the undersigned:

Advisor's Name : Tjong Wan Sen
NIDN : 201008000250
Study program : Magister Information Technology
Faculty : Computing

declare that following thesis:

Title of undergraduate thesis : Blockchain Integrated RPG Game
Undergraduate Thesis author : Bagja Satyanugraha
Student ID number : 012201905035

will be published in **institution's repository**

Cikarang, 13 Februari 2023



(.....)
Tjong Wan Sen

BLOCKCHAIN INTEGRATED RPG GAME

ORIGINALITY REPORT

13%	13%	1%	%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	moam.info Internet Source	1 %
2	www.coursehero.com Internet Source	1 %
3	repository.uinsu.ac.id Internet Source	1 %
4	e-journal.uajy.ac.id Internet Source	1 %
5	repository.ub.ac.id Internet Source	<1 %
6	www.researchgate.net Internet Source	<1 %
7	wirebiru.blogspot.com Internet Source	<1 %
8	repository.uph.edu Internet Source	<1 %
9	semnastikom.uniyap.ac.id Internet Source	<1 %

Stats

Average Perplexity Score: 560.833



A document's perplexity is a measurement of the randomness of the text

Burstiness Score: 663.226



A document's burstiness is a measurement of the variation in perplexity

Your sentence with the highest perplexity, "*Penerapan blockchain pada game online terkadang mengurangi gaming experience disaat setiap terjadinya pergantian data yang membutuhkan pemain untuk membayar gas fee.*", has a perplexity of: 2440

ABSTRAK

Penipuan pada transaksi di game RPG harus ditangani, diantaranya adalah dengan mengadakan sistem pertukaran antar pemain yang terpercaya. Teknologi blockchain dapat digunakan sebagai penyimpanan data dan riwayat transaksi yang bersifat *immutable*. Penerapan blockchain pada game online terkadang mengurangi *gaming experience* disaat setiap terjadinya pergantian data yang membutuhkan pemain untuk membayar *gas fee*. Penulis menemukan solusi untuk mengurangi penggunaan *gas fee* dengan menyimpan data ke *local storage*.

Kata kunci: Penipuan, RPG, blockchain, transaksi, gas fee, *local storage*

KATA PENGANTAR

Pertama, saya ucapkan syukur atas kehadiran Allah SWT Yang telah memudahkan saya untuk menyelesaikan tugas akhir ini, sehingga tugas akhir ini dapat saya selesaikan dengan baik guna memenuhi salah satu syarat untuk gelar Sarjana Komputer Bidang Sistem Informasi, Fakultas Komputer. Tugas akhir ini dapat disusun dengan baik berkat bantuan dari pihak-pihak yang telah memberikan bantuan dan bimbingan masukan untuk saya. Selama proses penyusunan tugas akhir, Oleh karena itu saya ingin menyampaikan terima kasih yang sebesar besar nya kepada:

1. Keluarga, atas kasih sayang dan dukungan yang diberikan.
2. Sir Wan Sen sebagai pembimbing tugas akhir saya yang selalu memberikan bimbingan dan dukungan.
3. Semua teman teman seperjuangan yang tidak bisa saya sebutkan satu persatu.

Penulis menyadari bahwa masih banyak kekurangan dan kekeliruan dalam tugas akhir yang penulis buat oleh karena itu penulis memohon maaf dikarenakan masih banyak nya kekurangan pada tugas akhir yang penulis buat, dan penulis mengharapkan kritik dan saran yang bersifat membangun dari pembaca.

Penulis

DAFTAR ISI

Halaman

ABSTRAK	I
KATA PENGANTAR.....	II
DAFTAR ISI.....	III
DAFTAR TABEL	VI
DAFTAR GAMBAR.....	VIII
BAB I PENDAHULUAN.....	1
1.1 Latar Belakang	1
1.2 Perumusan Masalah	2
1.3 Tujuan Penelitian.....	2
1.4 Lingkup dan Batasan Masalah	2
1.5 Metodologi.....	3
1.6 Sistematika Penulisan.....	4
BAB II TINJAUAN PUSTAKA	6
2.1 Pengertian <i>Game</i>	6
2.2 RPG <i>Game</i>	6
2.3 <i>Blockchain</i>	6
2.4 Pengertian <i>Unity</i>	7
2.5 <i>Smart Contract</i>	7
BAB III ANALISIS SISTEM.....	8
3.1 Gambaran Umum Sistem.....	8
3.2.1 Gambaran Umum Sistem Yang Sudah Ada.....	8
3.2.2 Gambaran Umum Sistem Yang Diusulkan	9
3.2.3 Analisis Kebutuhan Fungsional	9
3.2.4 Kebutuhan Perangkat Lunak	11
3.3 Diagram <i>Use-case</i>	11
3.4 Narasi <i>Use-case</i>	13
3.5 Activity Diagram.....	40
3.5.1 Movement Activity Diagram.....	40
3.5.2 Camera Activity Diagram.....	41
3.5.3 Attack Activity Diagram.....	42
3.5.4 Critical Hit Activity Diagram.....	43
3.5.5 Dodge Activity Diagram.....	44
3.5.6 TriggerSkill Activity Diagram.....	45
3.5.5 Win Activity Diagram	46
3.5.7 Lose Activity Diagram	47
3.5.9 ReadStats Activity Diagram	48

3.5.10	ReadSkills Activity Diagram	49
3.5.11	Add Inv_items Activity Diagram	50
3.5.12	Read Inventory Items Activity Diagram.....	51
3.5.13	UpdateStats Activity Diagram	52
3.5.14	Remove Inventory Items Activity Diagram.....	53
3.5.15	Read Equipments Activity Diagram	54
3.5.16	Equip Activity Diagram	55
3.5.17	Unequip Activity Diagram.....	55
3.5.18	Upgrade Equipment Activity Diagram	58
3.5.19	Crystalize Activity Diagram	59
3.5.20	Level Up Skill Activity Diagram	59
3.5.21	Equip Skill Activity Diagram	62
3.5.22	Web3 Login Activity Diagram	63
3.5.23	Read Marketplace Item Activity Diagram.....	64
3.5.24	Buy Item Activity Diagram	65
3.5.25	Sell Item Activity Diagram	65
3.5.26	Convert Silver to Vekro Activity Diagram	68
BAB IV PERANCANGAN SISTEM		70
4.1	Class Diagram	70
4.2	Perancangan Antarmuka	71
2.4.1	Main Menu	72
2.4.2	Character Stats	72
2.4.3	Inventory	73
2.4.4	Inventory Item Detail	73
2.4.5	Inventory Compare Equipment	74
2.4.6	Inventory Sell Item	74
2.4.7	Wireframe Enhance.....	75
2.4.8	Skill Menu	75
2.4.9	Marketplace	76
2.4.10	Marketplace Buy	76
2.4.11	Convert Silver	77
2.4.12	Game	77
BAB V PENGEMBANGAN SISTEM		78
5.1	Pengembangan <i>Main Menu</i>	78
5.2	Pengembangan <i>Inventory</i>	80
5.3	Pengembangan <i>Character Stats</i>	81
5.4	Pengembangan <i>Current Equipment Detail</i>	87
5.5	Pengembangan <i>Unequip</i>	89
5.6	Pengembangan <i>Enhance</i>	90
5.7	Pengembangan <i>Inventory Detail</i>	92
5.8	Pengembangan <i>Skill</i>	94
5.9	Pengembangan <i>Game</i>	96
5.10	Pengembangan <i>Sell Item</i>	109
6.0	Pengembangan <i>Marketplace</i>	111
BAB VI EVALUASI DAN PENGUJIAN SISTEM		118
6.1	Rencana Pengujian	119
6.2	Pengujian Skenario	120
6.2.1	Skenario Pengujian Halaman Main Menu	120
6.2.2	Skenario Pengujian Halaman Inventory	121
6.2.3	Skenario Pengujian Halaman Skill	123

6.2.4	Skenario Pengujian Halaman Game	124
6.2.5	Skenario Pengujian Halaman Exchange.....	126
6.2.6	Skenario Pengujian Halaman Marketplace.....	126
BAB VII KESIMPULAN DAN SARAN.....		128
7.1	Kesimpulan.....	128
7.2	Rencana Pengembangan kedepan	128
DAFTAR PUSTAKA.....		129

DAFTAR TABEL

Tabel 3.1 Tabel Analisis Kebutuhan Fungsional	9
Tabel 3.2 Kebutuhan perangkat lunak	11
Tabel 3.3 Narasi <i>Use-case Movement</i>	13
Tabel 3.4 Narasi <i>Use-case Camera</i>	14
Tabel 3.5 Narasi <i>Use-case Read Stats</i>	15
Tabel 3.6 Narasi <i>Use-case Read Skills</i>	15
Tabel 3.7 Narasi <i>Use-case Attack</i>	16
Tabel 3.8 Narasi <i>Use-case Critical Hit</i>	17
Tabel 3.9 Narasi <i>Use-case Dodge</i>	18
Tabel 3.10 Narasi <i>Use-case Trigger Skill</i>	19
Tabel 3.11 Narasi <i>Use-case Win</i>	20
Tabel 3.12 Narasi <i>Use-case Lose</i>	21
Tabel 3.13 Narasi <i>Use-case Add Inv_Items</i>	22
Tabel 3.14 Narasi <i>Use-case Update Stats</i>	23
Tabel 3.15 Narasi <i>Use-case Read Inv_Items</i>	24
Tabel 3.16 Narasi <i>Use-case Remove Inv_Item</i>	25
Tabel 3.17 Narasi <i>Use-case Read Equipment</i>	26
Tabel 3.18 Narasi <i>Use-case Equip</i>	27
Tabel 3.19 Narasi <i>Use-case Unequip</i>	28
Tabel 3.20 Narasi <i>Use-case Upgrade Equipment</i>	29
Tabel 3.21 Narasi <i>Use-case Crystalize</i>	30
Tabel 3.22 Narasi <i>Use-case Equip Skill</i>	32
Tabel 3.23 Narasi <i>Use-case Web3 Login</i>	33
Tabel 3.24 Narasi <i>Use-case Convert Silver to Diamond</i>	34
Tabel 3.25 Narasi <i>Use-case Buy Item</i>	35
Tabel 3.26 Narasi <i>Use-case Sell Item</i>	37
Tabel 3.27 Narasi <i>Use-case ReadMarketplaceItems</i>	38
Tabel 6.1 Rencana Pengujian.....	119
Tabel 6.2 Skenario pengujian pada halaman <i>Main Menu</i>	120

Tabel 6.3 Skenario pengujian pada halaman <i>Inventory</i>	121
Tabel 6.4 Skenario Pengujian Halaman <i>Skill</i>	123
Tabel 6.5 Skenario Pengujian Halaman <i>Game</i>	124
Tabel 6.6 Skenario Pengujian Halaman <i>Exchange</i>	126
Tabel 6.7 Skenario Pengujian Halaman <i>Marketplace</i>	126

DAFTAR GAMBAR

Gambar 3.1 Gambaran umum sistem yang sudah ada.....	8
Gambar 3.2 <i>Diagram Use-case Blockchain Integrated RPG Game</i>	12
Gambar 3.3 <i>Movement Activity Diagram</i>	40
Gambar 3.4 <i>Camera Activity Diagram</i>	41
Gambar 3.5 <i>Attack Activity Diagram</i>	42
Gambar 3.6 <i>CriticalHit Activity Diagram</i>	43
Gambar 3.7 <i>Dodge Activity Diagram</i>	44
Gambar 3.8 <i>TriggerSkill Activity Diagram</i>	45
Gambar 3.9 <i>Win Activity Diagram</i>	46
Gambar 3.10 <i>Lose Activity Diagram</i>	47
Gambar 3.11 <i>ReadStats Activity Diagram</i>	48
Gambar 3.12 <i>ReadSkills Activity Diagram</i>	49
Gambar 3.13 <i>Add Inv_Items Activity Diagram</i>	50
Gambar 3.14 <i>Read Items Activity Diagram</i>	51
Gambar 3.15 <i>UpdateStats Activity Diagram</i>	52
Gambar 3.16 <i>Remove Inventory Items Activity Diagam</i>	53
Gambar 3.17 <i>Read Equipments Activity Diagram</i>	54
Gambar 3.18 <i>Equip Activity Diagram</i>	56
Gambar 3.19 <i>Unequip Activity Diagram</i>	57
Gambar 3.20 <i>Upgrade Equipment Activity Diagram</i>	58
Gambar 3.21 <i>Crystallize Activity Diagram</i>	60
Gambar 3.22 <i>Level Up Skill Activity Diagram</i>	61
Gambar 3.23 <i>Equip Skill Activity Diagram</i>	62
Gambar 3.24 <i>Activity Diagram Web3 Login</i>	63
Gambar 3.25 <i>Read Marketplace Item Activity Diagram</i>	64
Gambar 3.26 <i>Buy Item Activity Diagram</i>	66
Gambar 3.27 <i>Sell Item Activity Diagram</i>	67
Gambar 3.28 <i>Activity Diagram Convert Silver to Vekro</i>	68

Gambar 4.1 <i>Class Diagram</i>	71
Gambar 4.2 <i>Wireframe Main Menu</i>	72
Gambar 4.3 <i>Wireframe Character Stats</i>	72
Gambar 4.4 <i>Wireframe Inventory</i>	73
Gambar 4.5 <i>Wireframe Inventory Item Detail</i>	73
Gambar 4.6 <i>Wireframe Inventory Compare Equipment</i>	74
Gambar 4.7 <i>Wireframe Inventory Sell Item</i>	74
Gambar 4.8 <i>Wireframe Enhance</i>	75
Gambar 4.9 <i>Wireframe Skill Menu</i>	76
Gambar 4.10 <i>Wireframe Marketplace</i>	76
Gambar 4.11 <i>Wireframe Marketplace Buy</i>	76
Gambar 4.12 <i>Wireframe Convert Silver</i>	77
Gambar 4.13 <i>Wireframe Game</i>	77
Gambar 5.1 Pengembangan <i>Main Menu</i>	78
Gambar 5.2 <i>Welcoming Reward code</i>	79
Gambar 5.3 <i>OnEquipmentChanged Code</i>	80
Gambar 5.4 Pengembangan <i>Inventory</i>	80
Gambar 5.5 Pengembangan <i>Character Stats</i>	81
Gambar 5.6 <i>Inventory Add Code</i>	82
Gambar 5.7 <i>Inventory UI Code</i>	83
Gambar 5.8 <i>ShowPagination</i>	84
Gambar 5.9 <i>Inventory Slot script</i>	85
Gambar 5.10 <i>AddUpdateItemToSlot Code</i>	86
Gambar 5.11 Pengembangan <i>Current Equipment Detail</i>	87
Gambar 5.12 <i>Current Equip Detail Code</i>	88
Gambar 5.13 Pengembangan <i>Unequip</i>	89
Gambar 5.14 <i>Unequip Code</i>	89
Gambar 5.15 Pengembangan <i>enhance</i>	90
Gambar 5.16 <i>Enhance Code</i>	91
Gambar 5.17 Pengembangan <i>Inventory Detail</i>	92

Gambar 5.18 <i>Inventory Detail Code</i>	93
Gambar 5.19 Pengembangan <i>Skill</i>	94
Gambar 5.20 <i>Skill Code</i>	95
Gambar 5.21 Pengembangan <i>Game</i>	96
Gambar 5.22 <i>Move Code</i>	97
Gambar 5.23 <i>Locked Camera</i>	98
Gambar 5.24 <i>Character Combat Code</i>	99
Gambar 5.25 <i>Player Combat Code</i>	99
Gambar 5.26 <i>EnemyController Code</i>	101
Gambar 5.27 <i>CharacterStats Code</i>	102
Gambar 5.28 <i>Character Stats Code</i>	103
Gambar 5.29 <i>OnHealthChanged Code</i>	103
Gambar 5.30 <i>SkillFunctions Code</i>	104
Gambar 5.31 <i>mutilate skill code</i>	105
Gambar 5.32 <i>EnemyStats Code</i>	106
Gambar 5.33 <i>Timeout Code</i>	107
Gambar 5.34 Pengembangan <i>Victory</i>	108
Gambar 5.35 <i>Convert Silver</i>	108
Gambar 5.36 <i>Convert Code Smart Contract</i>	109
Gambar 5.37 <i>Sell Material</i>	109
Gambar 5.38 <i>Sell Material Code Smart Contract</i>	110
Gambar 5.39 Interaksi <i>Sell Item</i> dengan <i>Chain Polygon</i>	111
Gambar 5.40 <i>Open Marketplace Code</i>	112
Gambar 5.41 <i>Material marketplace</i>	113
Gambar 5.42 <i>BuyMaterial Code SmartContract</i>	113
Gambar 5.43 Interaksi <i>Buy Material</i> dengan <i>Chain Polygon</i>	114
Gambar 5.44 <i>Sell Equipment</i>	115
Gambar 5.45 <i>SellEquipment Code SmartContract</i>	115
Gambar 5.46 <i>Equipment Marketplace</i>	116
Gambar 5.47 <i>BuyEquipment Code SmartContract</i>	116
Gambar 5.48 Interaksi <i>Buy Equipment</i> dengan <i>Chain Polygon</i>	117