VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELAGAVI

A Project Report

On

GAME'S USING QUANTUM COMPUTING

**Submitted in Partial fulfillment of requirement for the
Bachelor of Engineering
in**

Computer Science & Engineering

By

M SRINIVAS REDDY	3VC21CS091
K SREE DEEPA	3VC21CS077

Under the guidance of
LINGARAJ K
**Assistant Professor,
Dept of CSE**

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
RAO BAHADUR Y MAHABALESHWARAPPA ENGINEERING COLLEGE**
ACCREDITED BY NAAC WITH A+
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RAO BAHADUR Y MAHABALESHWARAPPA ENGINEERING COLLEGE

(AFFILIATED TO VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM. APPROVED BY AICTE, NEW DELHI &
ACCREDITED BY NAAC WITH A+)
BALLARI – 583104, KARNATAKA

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

CERTIFICATE

This is to certify that project work entitled **"GAME'S USING QUANTUM COMPUTING"** is bonafide Work carried out by **M SRINIVAS REDDY (3VC21CS091), K SREE DEEPA (3VC21CS077)** of 7th Semester in Partial fulfillment for the award of degree of Bachelor of Engineering in **Computer science & Engineering** of the **Visvesvaraya Technological University,** Belgaum during the year **2024-2025.** It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the Report deposited in the departmental library. The project report has been approved as it satisfies the academic requirement in respect of project work prescribed for the **Bachelor of Engineering Degree**.

Signature of Guide   **Signature of HOD**
LINGARAJ K   **Dr.GIRISHA.H**
Assistant Professor,   HOD, Dept of CSE,
Dept of CSE, RYMEC.   RYMEC.

Signature of Principal
Dr. T. HANUMANTHA REDDY
RYMEC, Ballari.

 Name of Examiners: **Signature with Date**
1)

2)

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<u>**PROJECT ASSOCIATES**</u>

M SRINIVAS REDDY   3VC21CS091

K SREE DEEPA   3VC21CS077

ABSTRACT

The intersection of gaming and quantum computing is an emerging frontier, combining the engaging nature of games with the groundbreaking potential of quantum algorithms. This project explores the development of quantum-based games, specifically **Quantum Sudoku** leveraging the unique principles of quantum mechanics such as superposition, entanglement, and quantum gates.

The primary objective was to design interactive games that not only entertain but also showcase the capabilities of quantum computation. Implemented using **Qiskit**, a Python-based quantum computing framework, these games utilize quantum circuits and qubits for core mechanics, offering players a novel experience that bridges classical gameplay with quantum phenomena.

Graphical interfaces were designed using **Tkinter** and **PyGame**, providing intuitive and engaging visuals. The underlying quantum logic enables features such as probabilistic outcomes, quantum entangled moves, and exponentially large puzzle spaces, which are infeasible in classical systems. For instance, in Quantum Sudoku, puzzles adapt dynamically based on quantum states, while Quantum Tic Tac Toe incorporates quantum entanglement to make moves unpredictable and challenging.

This project demonstrates the potential of quantum computing in redefining game mechanics and player experiences. It also serves as an educational tool, introducing quantum concepts in an interactive and accessible manner. By merging the fields of quantum computation and game design, these games pave the way for innovative applications and inspire further exploration in quantum gaming.

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