

MARINETE

Portuguese IRS Tax Assistant Bot

AI-Powered Telegram Bot for Tax Assistance

Project Type	Production-Ready Telegram Bot
Technology	Python 3.12 + Groq AI + Telegram API
Target Market	Portuguese Taxpayers (IRS)
Status	Active & Maintained
Test Coverage	5/5 Passing
Documentation	Comprehensive

Executive Summary

Marinete is a sophisticated Telegram bot designed to assist Portuguese taxpayers with IRS (Personal Income Tax) matters. The bot leverages cutting-edge AI technology through Groq API with Moonshot AI's Kimi K2 model to provide natural language conversations, tax simulations, quick calculations, and deduction guidance.

The project demonstrates professional software engineering practices including modular architecture, comprehensive testing, security best practices, and thorough documentation. Built with Python 3.12 and modern async/await patterns, the bot is production-ready and actively maintained.

Project Overview

Problem Statement: Portuguese taxpayers face complexity when dealing with IRS declarations, deductions, and calculations. Traditional solutions involve expensive accountants or navigating complex government websites.

Solution: Marinete provides an accessible, conversational AI interface through Telegram that guides users through tax-related questions with natural language conversation.

Target Audience: Portuguese residents and taxpayers who need assistance with IRS declarations.

Key Features

Feature	Description
Natural Language Processing	Conversational AI using Groq API with Kimi K2 model
Tax Simulation	Comprehensive 20-question interactive questionnaire
Quick Calculator	Rapid tax calculation with minimal inputs
Deduction Guidance	Explains available tax deductions and eligibility
Context Awareness	Maintains conversation context throughout session
Multi-Command Interface	Seven specialized commands for different needs
Security	Environment-based configuration, no hardcoded secrets

Technical Stack

Backend: Python 3.12.x • python-telegram-bot 21.11.1 • Groq API • Moonshot AI (Kimi K2) • Poetry

Architecture: Modular Design • Async/Await • Handler Pattern • Environment Configuration • State Management

Quality: Automated Testing (5/5 passing) • Git/GitHub • Comprehensive Documentation • Logging • Security Best Practices

System Architecture

Component	Responsibility	Key Files
Entry Point	Application initialization and bot setup	main.py
Conversation Handler	Manages conversation state and flow	conversation_handler.py
LLM Handler	AI model interactions via Groq API	llm_handler/groq_handler.py
Configuration	Centralized config management	config.py
Prompts	System prompts and personality	prompts.py
Testing	Automated tests for functionality	test_groq_api.py

Testing & Quality Assurance

Test Coverage: API connectivity • Model response validation • Context handling • Error handling • Configuration validation

Code Quality: PEP 8 compliance • Type hints • Comprehensive documentation • Robust error handling • Structured logging • Security best practices

Deployment & Operations

Prerequisites: Python 3.12+ • Telegram Bot Token • Groq API Key • Virtual environment

Installation: Clone repository → Create virtual environment → Install dependencies → Configure .env → Run tests → Start bot

Production: Process management (systemd/supervisor) • Log monitoring • Rate limiting consideration • Regular backups • Security updates

Technical Achievement: API Migration

Successfully migrated from deprecated Grok API (xAI) to modern Groq API with Moonshot AI. Challenges included API compatibility, Python version conflicts, library dependencies, and context preservation. Result: Zero downtime migration with improved performance and reliability.

Future Roadmap

- Multi-language support (Spanish, English)
- Data persistence with database
- Advanced analytics and tax optimization
- Document processing with OCR
- Integration with government tax portal
- Native mobile application
- Web dashboard for power users
- Premium features with subscription model

Contact & Collaboration

This project is actively maintained and open to collaboration. Available for freelance work, contract positions, and consulting on similar projects.

Specializing in: Python Development • Telegram Bot Creation • AI Integration • FinTech Solutions

GitHub: github.com/yourusername/irs_telegram_bot

Contact: Available via [Freelancer.com](https://www.freelancer.com)