**Non-Exact Separable ODE Solver Description**

The **non\_exact\_separable\_ode\_solver.py** program is designed to solve non-exact separable ordinary differential equations (ODEs) in a specific format. Here's how the equation should be structured:

* The equation should be in the form of **(M(x,y)dx + N(x,y)dy=0)**.
* Replace **M(x,y)** and **N(x,y)** with the expressions that define your ODE.
* Optionally, you can specify initial conditions for **x** and **y** . Provide these initial conditions as **x** and **y** variables in the code if needed.

The primary function, **masterSolver(eqn, x='', y='')**, takes the ODE equation and, optionally, initial conditions as input. It attempts to solve the non-exact separable ODE and provides the solution.

Other functions briefly described:

* **Solve(M, N)**: Attempts to solve the ODE by separating variables and performing integration.
* **replaceSubStr(eqn)**: Handles string substitutions for trigonometric functions and formatting.
* **reduceToStandard(eqn)**: Transforms the input equation into a standard form suitable for solving.
* **removeLog(fx, fy)**: Attempts to remove logarithmic terms from **fx** and **fy** for simplification.
* **initial\_condition(sol, x, y)**: Determines the particular solution using initial conditions, if provided.
* **expTo\_e(eqn)**: Converts "exp" to "e^" in the equation for better representation.
* **formateAnswer(solution)**: Formats the solution string for consistency.

**Example**

An example of how to use the program with the **masterSolver** function is provided in the code. You can input your non-exact separable ODE in the equation variable and, if needed, specify initial conditions for **x** and **y**.

**Conclusion**

The **Non-Exact Separable ODE Solver** is a tool for solving non-exact separable ordinary differential equations with optional initial conditions. You can manually input your ODE and find the solution. Please refer to this manual and the example code for guidance on using the program effectively.

**Please make sure to structure your non-exact separable ODE according to the provided format for successful usage.**