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APPLICATION OF COMPUTATIONAL THINKING ON MORAL CONCEPTS

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ABSTRACT

*A*pplication of Computational thinking on moral concepts is an interdisciplinary effort to combine philosophy domain and computer domain. This paper explains about Basic concept of computational thinking on Thirukural (Ancient Tamil scripture) and Vethathiri Maharishi Moral concept.

KEYWORDS: *Computational Thinking, Moral, Virtue, Vethathiri Maharishi, Thirukural.*

INTRODUCTION

We are living in a Computer Age, where the major trend is using Computers in all walks of life either directly or indirectly, to the problem area or solutions area. In this paper attempt has been made to explain moral in computational thinking perspective.

WHAT IS COMPUTATIONAL THINKING?

Computerization is the process of using/applying computers, for example computerized land records, computerized eye testing, Computer based learning etc. Before computerization particularly the analysis part of computerization, how to do computerization? Or how to apply computerization? may be called as Computational thinking. Computational thinking is type of Skill set like System thinking or quality Thinking etc. Computational thinking is not a programming skills, it is towards programming[5]. The Idea stage, finding solutions through Computing. Computational thinking skill sets often include the following tools/techniques like Abstraction, Decomposition, Logic, Pattern Recognition, algorithmic Thinking etc.

EXAMPLE OF COMPUTATIONAL THINKING

Computers are being used in many fields. Let us see, how it can be applied to cooking particularly on one Typical Tea preparation.

Conventional Method of Preparing Tea

Switch on Gas Stove

⇩

Pour and Heat Water

⇩

Adding Tea Powder

⇩

Adding Milk

⇩

Switch of Gas Stove

⇩

Filtering Tea

⇩

Adding Sugar

⇩

Serving Tea
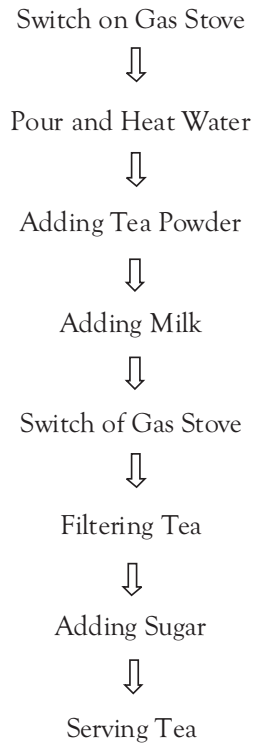
If you think of applying Computer directly with the above steps, Computerization Seems to difficult or not feasible solution.

Using Computer in conventional method of Tea preparation may be difficult, let us see, how it was solved using Tea vending machine.

Typical Tea Vending Machine Flow

Switch on Button

⇩

Heating Water

⇩

Switch off Thermostat, After Required Temperature

⇩

Add Premix of Milk Powder With or Without Sugar

⇩

Disperse Milk

⇩

Add Teabag

⇩

Serve Tea
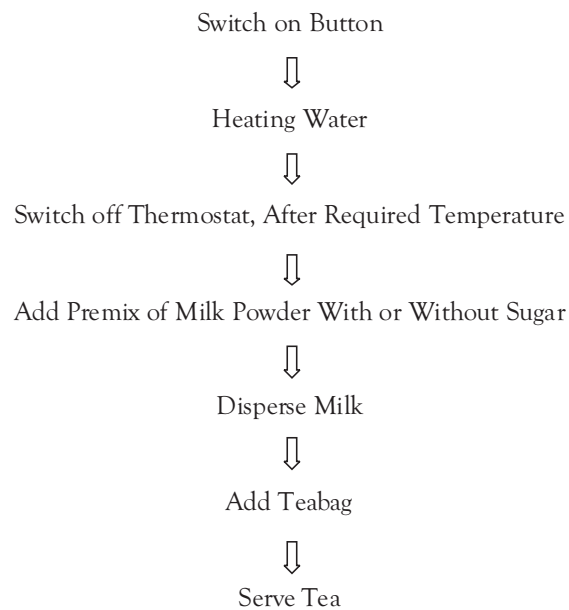
Tea vending machine is a classic example of computational thinking where modifying conventional Tea preparation based on available Computer technology.

Moral- Existing System

Moral is an important concept to develop a good citizen. At present Moral is teaching Mostly through stories.

Moral-Proposed System

If attempt has been made teaching moral via Computer games or software, children can learn moral Concept while playing games, hence sincere attempt has been made via Computational thinking perspective on moral.

Application of Computational thinking in Moral

There are many definitions of moral, each philosophy deals with own style. Let us see in Thirukual written by Tamil saint Thiruvalluvar. In Chapter 4, Assertion of the Strength of Virtue, under the section name "virtue" of the couplet 35.

அழுக்கா றவாவெகுளி இன்னாச்சொல் நான்கும்
இழுக்கா இயன்ற தறம்

Tis virtue when, his footsteps sliding not through envy, wrath,
Lust, evil speech-these four, man onwards moves in ordered path'.
That conduct is virtue which is free from these four things, viz., malice, desire, anger and bitter speech[1]. Malice (Jealousy), Desire, Anger, Harsh words are the four Removed then it is moral else it is not moral.

Flow Chart: Towards Computational Statement
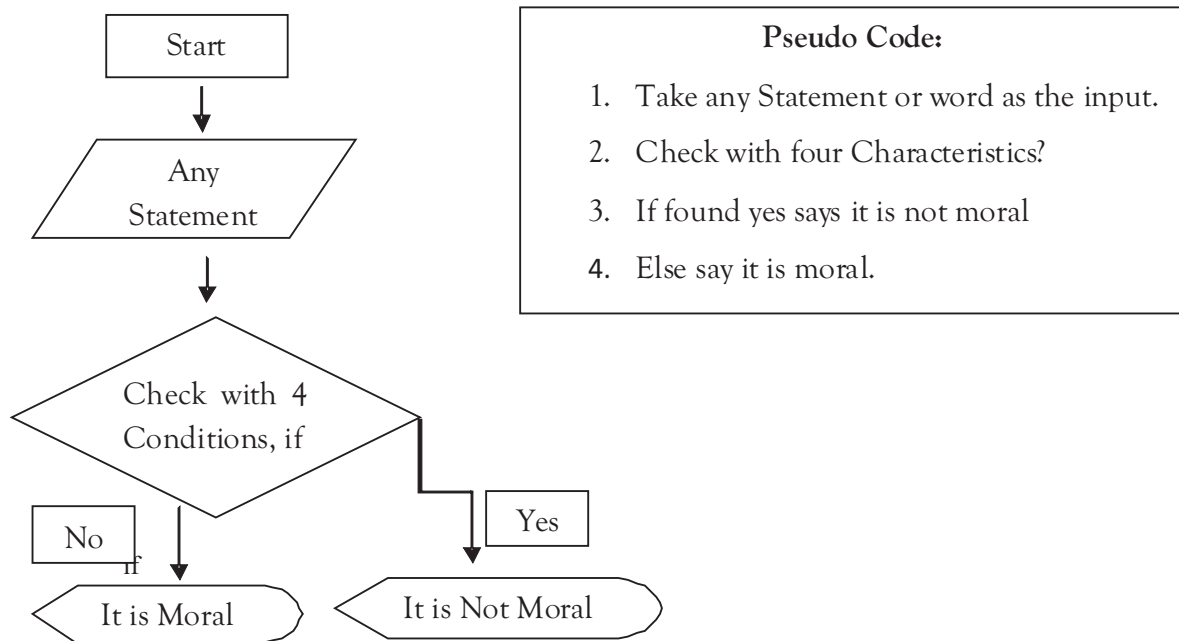
Any word/Deed contains any one of the four Characteristic then it is not moral, else it is moral. Lets assign variables: Statement=S; Jealousy=A: Anger=B; Desire=C; Harsh words=D.

IF {S = ((A or B or C or D) == True)}
Then (S = Not moral)
Else
(S= Moral)
END IF

User Interface Design

```
┌──────────────┐        ┌──────────────┐        ┌──────────────┐
│   Input      │        │  Is Moral?   │        │              │
│  Statement:  │        │              │        │ It is Not Moral
│ ┌──────────┐ │   ⇒    │ Jealous □ Desire□     │   ⇒          │
│ │You Have to│ │       │              │        │              │
│ │ Obey Me  │ │        │  Anger ☑     │        │              │
│ └──────────┘ │        │       X      │        │              │
│              │        │ Harsh Word   │        │              │
└──────────────┘        └──────────────┘        └──────────────┘
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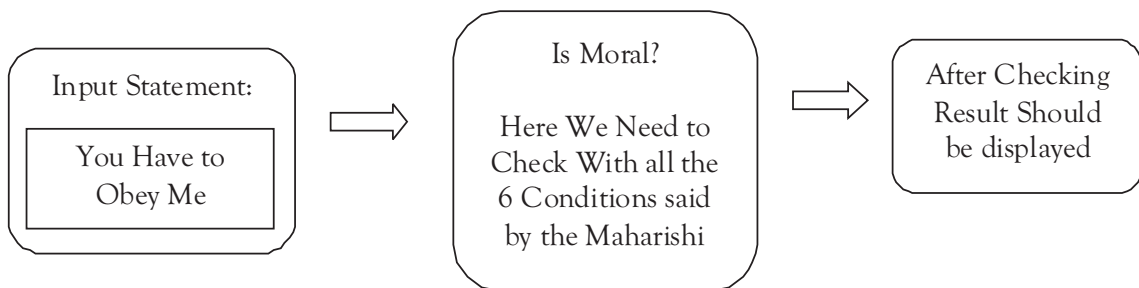
The above process initially can check with self assessment approach, later can be through intelligent algorithm.

Vethathiri Maharishi Philosophy of Moral

Similarly we can check with Vethathiri Maharishi Philosophy of moral.

As per Vethathiri Maharishi, All those thoughts, words, and deeds which do not harm to1) Self or 2) others. 3) Physically or 4) Mentally, 5) Presently or 6) In the future are called Morality.[2]
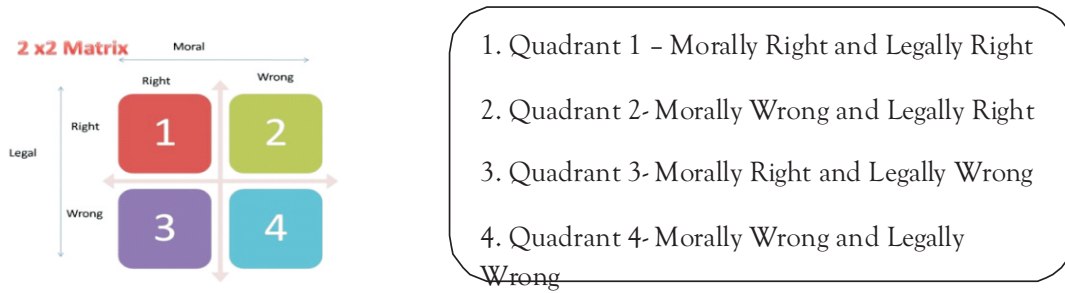
User Interface Design

```
┌──────────────┐        ┌──────────────┐        ┌──────────────┐
│   Input      │        │  Is Moral?   │        │ After Checking│
│  Statement:  │        │              │        │ Result Should │
│ ┌──────────┐ │   ⇒    │ Here We Need to       │ be displayed  │
│ │You Have to│ │       │ Check With all the    │              │
│ │ Obey Me  │ │        │ 6 Conditions said     │              │
│ └──────────┘ │        │ by the Maharishi      │              │
└──────────────┘        └──────────────┘        └──────────────┘
```

Legal vs. Moral

What is Moral? There can be many definitions but for simple understanding live with natural law.

What is legal? Legal laws formed based on the natural laws, it is subjected to change once we more understand the natural law

1. Quadrant 1 – Morally Right and Legally Right

2. Quadrant 2- Morally Wrong and Legally Right

3. Quadrant 3- Morally Right and Legally Wrong

4. Quadrant 4- Morally Wrong and Legally Wrong

We can give some statement to check whether students have understood the concept of moral.

Classify the following Statements with the above four Quadrants
A.Petty Shop near School
B.Petty shop near school selling tobacco (cigarette) to Adults
C.Petty Shop near school selling cigarette to student's age below (18).
D.Jealousy and vengeance to others
E.Copying in examinations
F.In emergency road accident case going in "one way" to hospitalize the victims.

Once students give answer, moral teacher can give correct answer and clarifications. Different types of statement can be checked with this framework.
Answer.
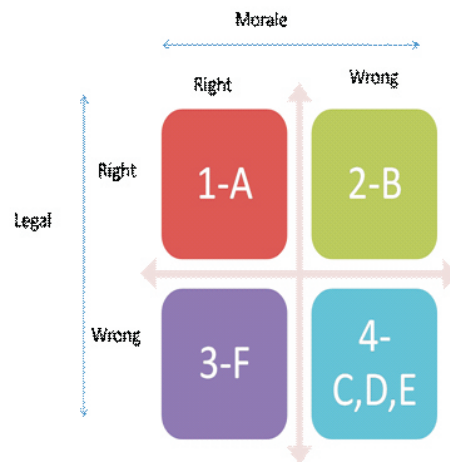
CONCLUSION
Computational thinking is considered as one of the 21st century skills as per the educationalist. Let us cultivate and develop this skill set and find solutions. Lots of scope in philosophy, Let the future generations understand the moral concept in addition to stories learn through computational way and lead a moral life.

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