MODEL BOXSET TO INCREASE SURVIVAL RATE AND GROWTH OF MEALWORMS

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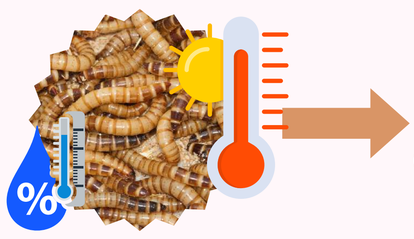
PROBLEM

IoT devices

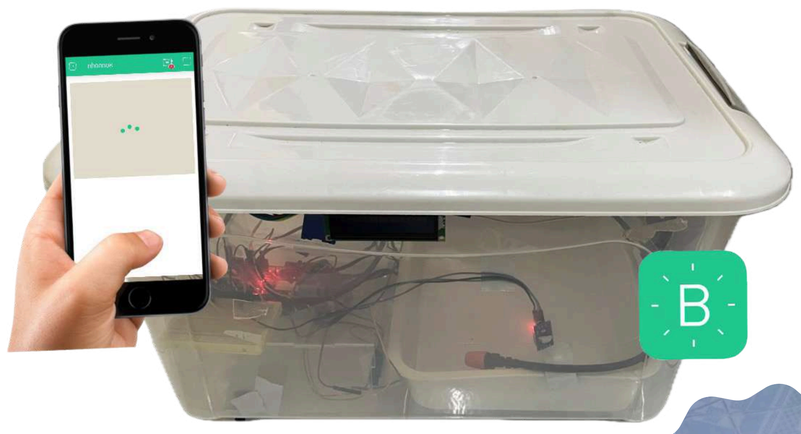
Smart Farming



Mealworms need suitable temperature & humidity

High Protein

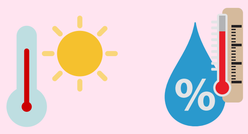
Good income



FRAMEWORK

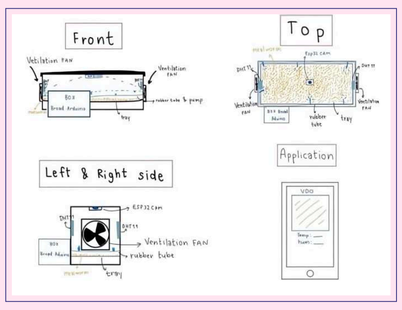
1

1.1



Study various factors affecting mealworms.
(Temperature 25-35°C & Humidity 65-75%.)

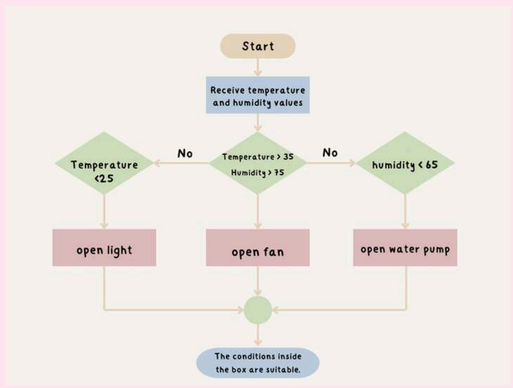
1.2



Design the structure of a Model boxset.

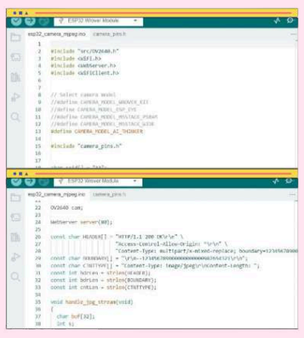
2

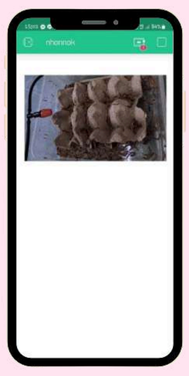
- Flowchart



Develop a system by programming to control factors that affect mealworms.

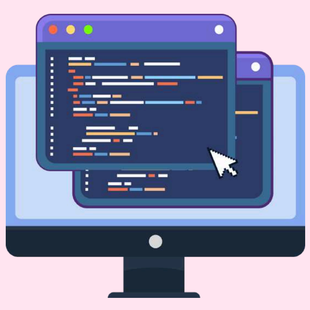
3





Develop an application for observing Mealworms .

4

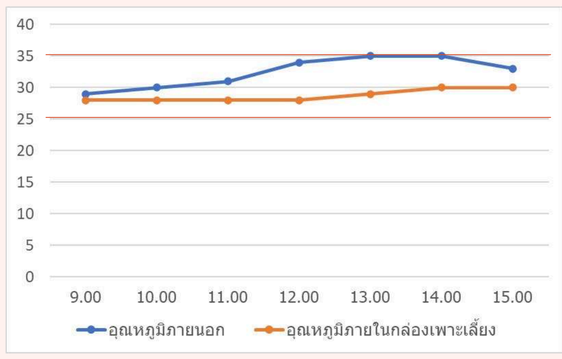


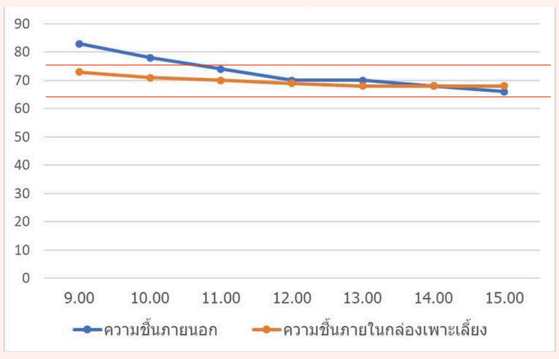
Test & improve program - application

FINDING

PART 1 Testing the performance of temperature and humidity control inside a Model boxset.

A graph comparing the temperature & humidity inside and outside the Model boxset





From the graphs, the temperature control within the box for each instance can maintain the temperature in the range of 25-35°C and humidity in the range of 65-75%. The box is capable of adjusting the internal environment such that external weather conditions do not affect the temperature and humidity levels being controlled inside the box.

PART 2 The influence of the Model boset on enhancing the survival rate and growth of Mealworms .

A table showing the influence of a Model boxset to increase survival rate and growth of mealworms (n = 7)

Methods of mealworm farming	Analysis value from 7 days of farming		
	Weight gain (mg/individual)	Total Weight (gram)	Survival Rate (percent)
Natural farming	$17.74^{a} \pm 1.64$	$108.74^{a} \pm 5.91$	$89.51^{a} \pm 1.60$
Farming using Model boxset	$30.96^{b} \pm 2.13$	$132.97^{b} \pm 2.87$	$96.04^{a} \pm 1.12$

From the table, it can be concluded that the Model boxset significantly increases weight and survival rates compared to conventional breeding methods, with a statistical significance level of 0.05 ($P \geq 0.05$).

PART 3 Evaluation of the quality of the Model boxset to increase survival rate and growth of Mealworms .

A table showing the evaluation results from all 7 farmers who used the system (n = 7).

Question	Average opinion	Appropriateness
System capabilities	4.64±0.32	Excellent
Program design	4.36±0.44	Good
Benefits	4.50±0.47	Excellent
Average	4.50±0.08	Excellent

From the evaluation results table, it was found that the capabilities of the system, the design of the software program, and the benefits of using the Model boxset to increase survival rate and growth of mealworms are rated at a very high level, with an overall average score of 4.50 ± 0.08.

INTERPRETATION ANDCONCLUSION

- Model boxset with constant temperature and humidity control throughout the day.
- Model boxset can increase the weight of mealworms and has a higher survival rate compared to conventional rearing methods.
- User evaluation of the system found it to be at the highest level of excellence.
- Model boxset enhances convenience, increases productivity, reduces the burden of care, and supports the livelihood of mealworm farmers.

REFERENCES

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