

# Arithmetic Instructions

Spoken Tutorial Project

<https://spoken-tutorial.org>

National Mission on Education through ICT

<http://sakshat.ac.in>

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7 August 2020



# Learning Objectives



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- **Arithmetic instructions**



# System Requirements



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- **Ubuntu Linux 18.04 OS**



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- **Ubuntu Linux 18.04 OS**
- **LDmicro**



# Pre-requisites



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- Working of One Shot instructions





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- Working of One Shot instructions
- If not, please refer to the relevant tutorials in this series from <https://spoken-tutorial.org>



# Arithmetic Instructions



# Arithmetic Instructions

## Four arithmetic instructions



# Arithmetic Instructions

## Four arithmetic instructions

- **ADD**



# Arithmetic Instructions

## Four arithmetic instructions

- **ADD**
- **SUB**



# Arithmetic Instructions

## Four arithmetic instructions

- ADD
- SUB
- MUL



# Arithmetic Instructions

## Four arithmetic instructions

- ADD
- SUB
- MUL
- DIV



# Arithmetic Instructions

- It can handle only up to 16-bit signed integer values





# Arithmetic Instructions

- It can handle only up to 16-bit signed integer values
- Floating point numbers are not handled by these instructions



# How can we prevent PLC from evaluating the instruction on each cycle?



# How can we prevent PLC from evaluating the instruction on each cycle?

We can do that by using a **One Shot** instruction



# Assignment



# Assignment

Replace an OSF in the place of OSR  
and observe the **result** variable

**Observation:**



# Assignment

Replace an OSF in the place of OSR and observe the **result** variable

## Observation:

- The value changes when the input goes from high to low



# Assignment

Replace an OSF in the place of OSR and observe the **result** variable

## Observation:

- The value changes when the input goes from high to low
- That is when the state of Xswitch goes from 1 to 0



# When to use OSR/OSF?





# When to use OSR/OSF?

- Use OSR, when you want the change in count to happen when the switch is pressed



# When to use OSR/OSF?

- Use OSR, when you want the change in count to happen when the switch is pressed
- Use OSF, when you want the change to happen when the switch is released



# Arithmetic Instructions



# Arithmetic Instructions

- SUB, MUL and DIV work similar to ADD



# Arithmetic Instructions

- SUB, MUL and DIV work similar to ADD
- **NOTE:**  
DIV instruction gives quotient as the result



# Arithmetic Instructions

- SUB, MUL and DIV work similar to ADD
- **NOTE:**  
DIV instruction gives quotient as the result
- Explore these instructions on your own



# Summary

- **Arithmetic instructions**



# About the Spoken Tutorial Project

- Watch the video available at [https://spoken-tutorial.org/What\\_is\\_a\\_Spoken\\_Tutorial](https://spoken-tutorial.org/What_is_a_Spoken_Tutorial)
- It summarises the Spoken Tutorial project
- If you do not have good bandwidth, you can download and watch it





# Spoken Tutorial Workshops

## The Spoken Tutorial Project Team

- Conducts workshops using spoken tutorials
- Gives certificates to those who pass an online test
- For more details, please write to [contact@spoken-tutorial.org](mailto:contact@spoken-tutorial.org)



# Forum questions

- Questions in THIS Spoken Tutorial?
- Visit <https://forums.spoken-tutorial.org/>
- Choose the minute and second where you have the question
- Explain your question briefly
- The Spoken Tutorial project will ensure an answer

**You will have to register to ask questions**



# Forum for specific questions

- Questions not related to the Spoken Tutorial?
- Do you have general / technical questions on the Software?
- Please visit the FOSSEE Forum  
<https://forums.fossee.in/>
- Choose the Software and post your question



# Acknowledgements

**Spoken Tutorial project is supported by**

- **National Mission on Education through ICT (NMEICT)**
- **Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching**

**Initiatives of MHRD, Government of India**



# THANK YOU!

For more Information, visit our website  
<https://fossee.in/>

