

Badam Halwa **of** **Embedded Systems**

Version 1.1

Shakthi Kannan
shakthimaan.com

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System Architecture

Applications

Middleware

Operating System

Hardware

Compilation

Cross- Compilation

Build

... machine you are building on

Host

... machine you are building for

Target

... machine that GCC will produce
code for

Building Toolchain

| | | | |
|--------------|------------|------------|--------------|
| Build | x86 | x86 | sparc |
|--------------|------------|------------|--------------|

| | | | |
|-------------|------------|------------|------------|
| Host | x86 | x86 | x86 |
|-------------|------------|------------|------------|

| | | | |
|---------------|------------|------------|------------|
| Target | x86 | arm | arm |
|---------------|------------|------------|------------|

| | | |
|---------------|--------------|-----------------|
| Native | Cross | Canadian |
|---------------|--------------|-----------------|

Inter pre tation

Where is the

Badam

Halwa?

Static Library

libopcodes.a

S-h-a-r-e-d

Library

libopcodes-2.17.so

**von Neumann
architecture**

**Harvard
architecture**

Microcontroller

8051

Microprocessor

ARM

Intel

SoC

Atmel AT91RM9200 ARM920T

Cirrus Maverick EP9307

STMicroelectronics

“Nomadik”

TI OMAP2410

CISC

Intel Pentium
Motorola 68000
VAX
PDP-11

RISC

ARM
Xscale
PowerPC
SPARC
MIPS
AVR

Booting

Hard disk

Flash

Network

USB

RAM

BIOS

Bootloader

u-boot
RedBoot

Bootloader

Kernel

Ramdisk

Storage

Monolithic Kernels

Linux
BSD

Microkernels

GNU Mach
L4

**Memory-
mapped I/O**

**Port-
mapped I/O**

**Are you going to
give the**

Badam

Halwa

or not?

0x0000 000c

0x0000 0000

Little Endian

MSB

LSB

0x0000 0009

0x0000 0000

gnidnE giB

MSB

LSB

Process

Threads

System calls

open()

close()

read()

write()

exec()

fork()

kill()

**Block-
ing**

Non-blocking

Synchronous

Asynchronous

IPC

Pipes

FIFO

Mutex

Semaphores

Message Queues

Shared Memory

Polling

POP fetch e-mail

Interrupts

Ethernet
Keyboard

74 68 61 6E 6B

79 6F 75