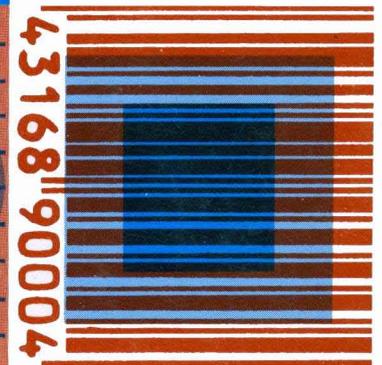
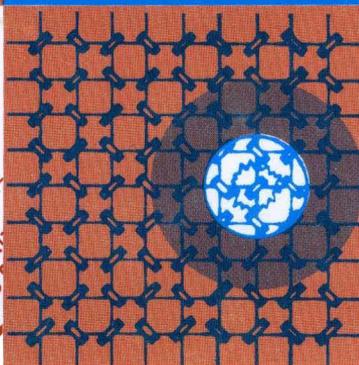
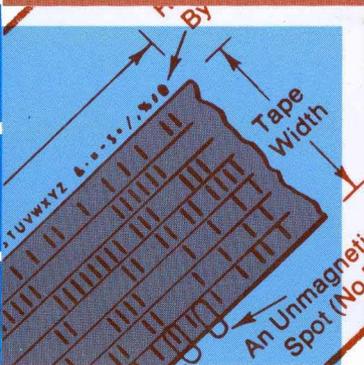
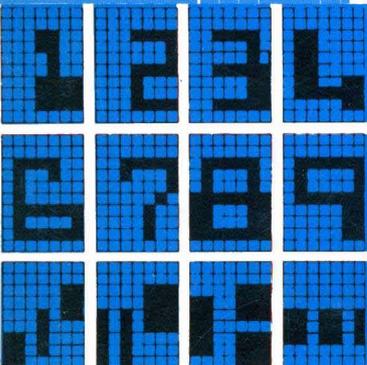
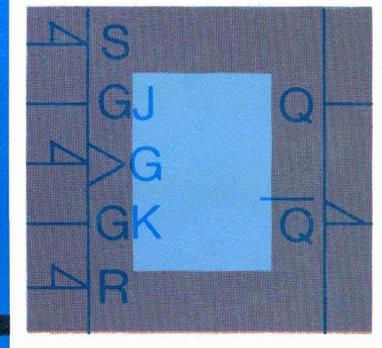
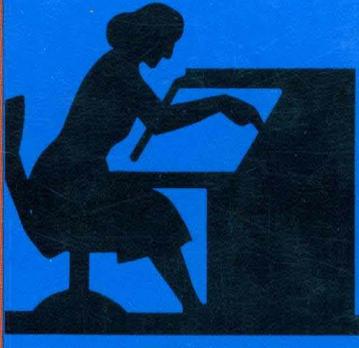


Decision Table Name Or Number	<b>C</b> (Rule Entry)
<b>A</b> (Condition Stub)	<b>D</b> (Condition Entry)
<b>B</b> (Action Stub)	<b>E</b> (Action Entry)



I/O CHANNEL INTRODUCTION

LEARNING GUIDE



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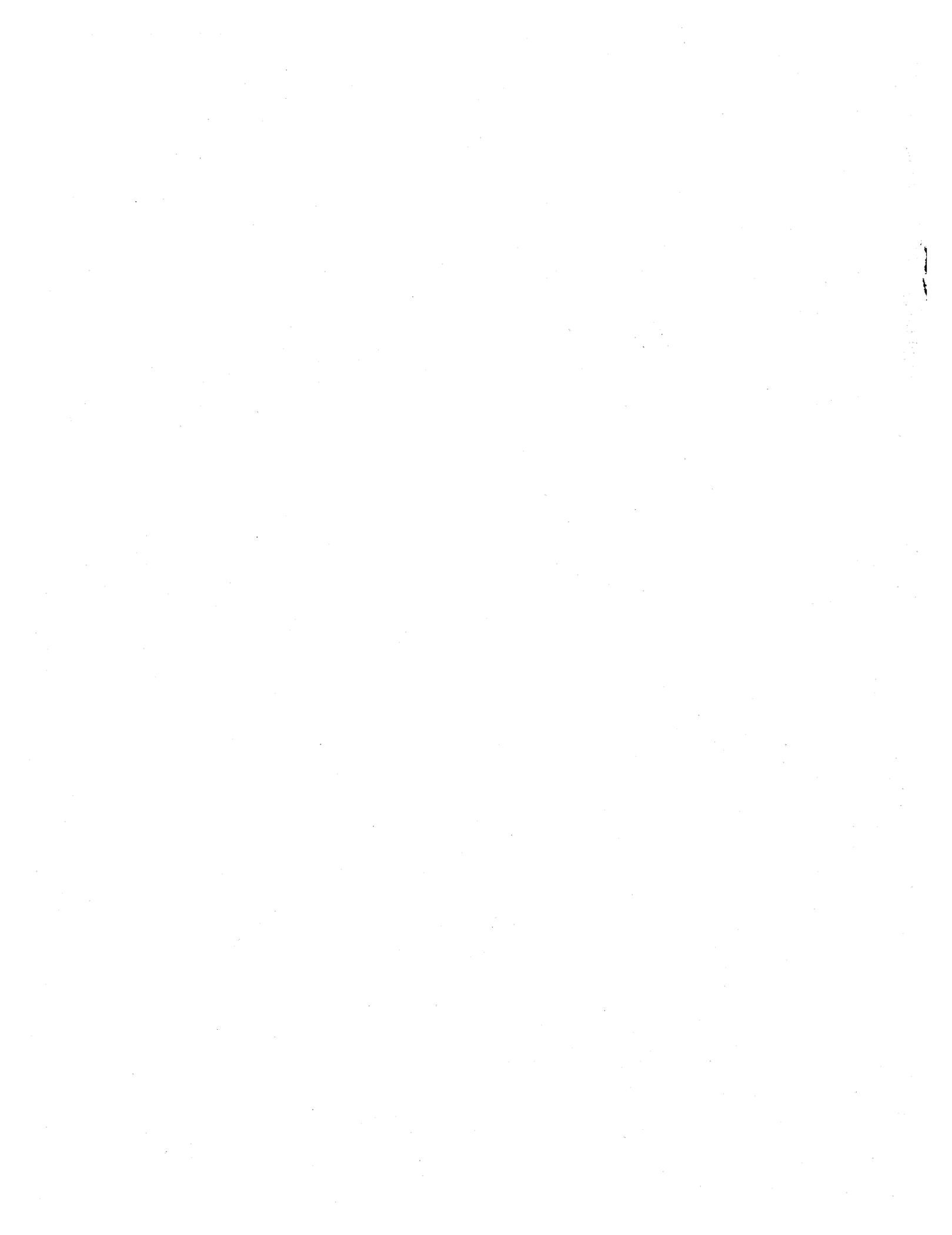
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## CONTENTS

### I/O CHANNEL INTRODUCTION, 1

#### Learning Activities:

- 1-A Introduction to the I/O Channel, 2
- 1-B Q-Register Equipment Addressing, 2
- 1-C A-Register Codes Concept, 3
- 1-D Data Input and Output, 3
- 1-E Control Signals, 4
- 1-F I/O Sequencing, 4
- 1-G Progress Test, 4



## I/O CHANNEL INTRODUCTION

Computers usually have peripheral devices connected to them. Some of these devices allow information to be entered into the central processor, and others serve as output equipment. In either input or output operations, information must flow through the computer system's input or output (I/O) channel or use some similar method.

This study unit, which uses text readings, describes the way data is transferred between the CYBER 18 computer and the peripheral equipment.

This unit describes the requirements of an input or output (I/O) channel, and identifies two methods of data transfer that are used in a CYBER 18 system. One method, direct memory access (DMA), requires little or no involvement of the central processor once the operation is started. On the CYBER 18 system, the storage module drive for the disk uses the DMA type of data transfer.

The other method of data transfer, programmed I/O, is controlled by the central processor and uses both the A- and Q-registers. This is the type of data transfer that would be used, for example, to send information to a line printer for printout.

This unit also gives examples of the proper sequences needed for all of the instructions, register codes, and control signals to perform a successful input or output operation.

## I/O CHANNEL INTRODUCTION

### OBJECTIVE

- o Identify the equipment used on the CYBER 18 I/O channel.

### 1-A INTRODUCTION TO THE I/O CHANNEL

This activity describes the requirements of an I/O channel and describes two methods of data transfer. The I/O channels are the computer's contact with the world and its human operators.

#### Resource

Text "Introduction to the I/O Channel,"  
pages 1-1 through 1-2

### OBJECTIVES

- o Match the equipment address code in the Q-register with its corresponding device.
- o Identify the I/O device being selected by examination of the Q-register contents.

### 1-B Q-REGISTER EQUIPMENT ADDRESSING

This activity describes how the Q-register addresses the peripheral device to be used in an I/O operation, as well as the type of operation to be performed.

#### Resource

Text "Q-Register Equipment Addressing,"  
pages 1-3 through 1-7

OBJECTIVE

- o Distinguish function from status codes and match examples of codes with their descriptions.

1-C A-REGISTER CODES CONCEPT

This activity describes the relationship between the A- and Q-registers and describes both function and status codes used in the A-register.

Resource

Text "A-Register Function Codes and A-Register Status Codes," pages 1-8 through 1-13

OBJECTIVE

- o Define "data assembly" and "data disassembly."

1-D DATA INPUT AND OUTPUT

This activity describes the primary I/O instructions INP and OUT and the sequence followed by the computer in performing them.

Resource

Text "Data Input and Output," pages 1-14 through 1-15

**OBJECTIVE**

- o Match control signals with their function descriptions.

1-E CONTROL SIGNALS

This activity describes the important control, read, and write instructions. Six control and four read and write instructions are included.

Resource

Text "I/O Control Signals,"  
pages 1-16 through 1-18

**OBJECTIVE**

- o Arrange the steps in input and output operations.

1-F I/O SEQUENCING

This activity describes the sequence of events in a typical input and output operation of the CYBER 18 system.

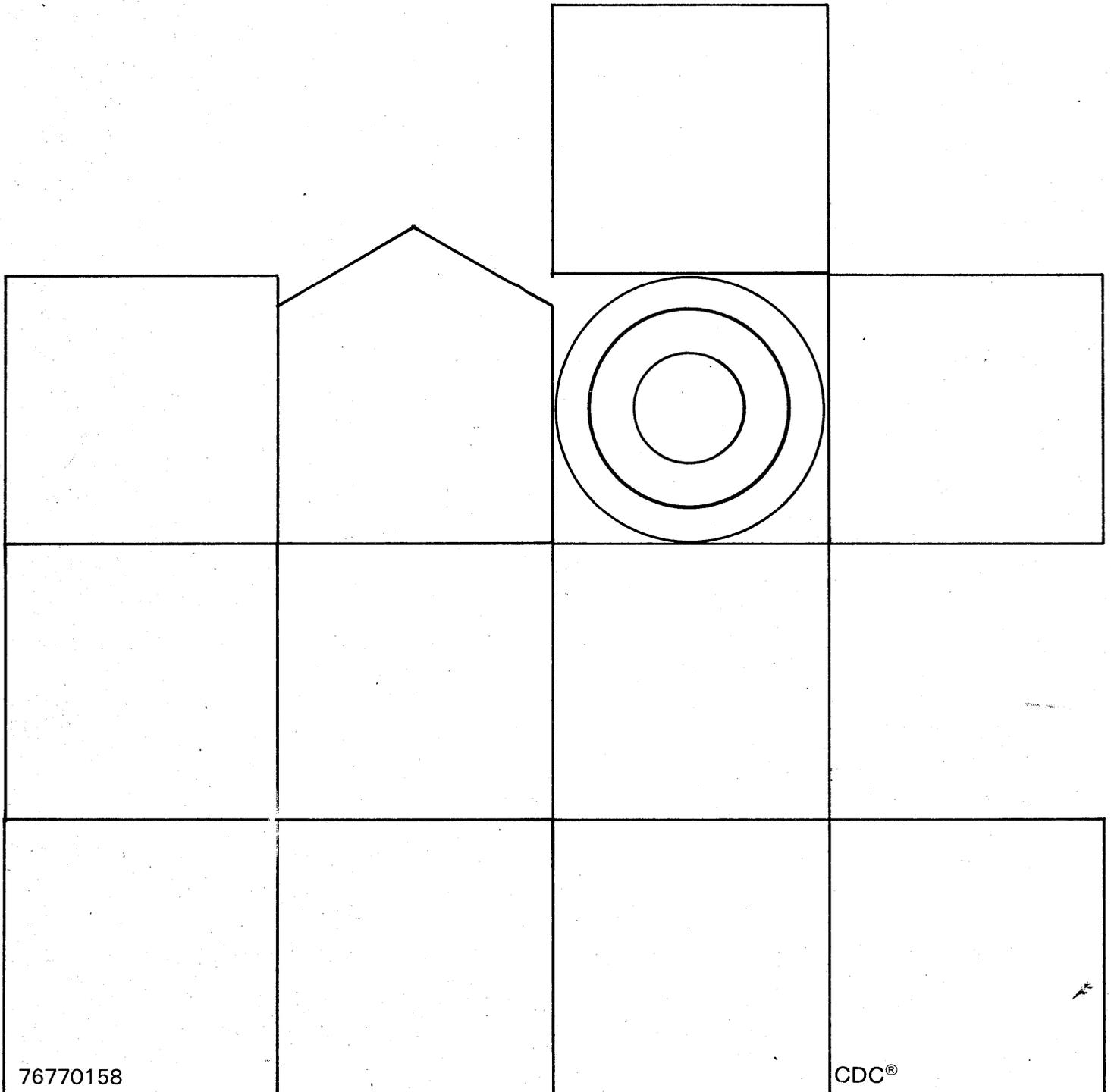
Resource

Text "I/O Sequencing," pages 1-19 through 1-21

1-G PROGRESS TEST

At this point you should check your understanding by taking this progress test.





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