UNIT 3 AUXILIARY EQUIPMENT

CONTENTS

1.0 INTRODUCTION

The auxiliary equipment, as its name suggests, is not a computer but is necessary in a computing environment in order to ensure proper functioning and smooth running of computing activities. In this module, we shall address in some detail the importance of equipment such as the air conditioner, the voltage stabiliser, the uninterruptible power system and the line transformer in a data processing environment.

2.0 OBJECTIVES

At the end of this unit you should be able to:

- identify the auxiliary equipment in a computing environment
- discuss the importance of the auxiliary equipment to the smooth running of a computing centre.

3.0 MAIN CONTENT

3.1 The Air Conditioner

A computer is an electronic machine. It is, therefore, capable of generating heat. A computer is manufactured to operate in an environment with a specific temperature range. When the temperature of the environment in which a computer is kept falls outside the specific range, the computer may function badly and consequently get damaged.

The free air is, basically, dust laden. Dust is metallic in nature and, as such, capable of conducting electricity. If dust is allowed to settle on a computer, particularly the

electronic circuits, the dust can bridge two circuits. The bridging of two electronic circuits may cause a serious damage to the computer. Thus, air conditioners are needed in a computer environment to:

- condition the temperature, and
- prevent dust.

3.2 The Voltage Stabiliser

A computer when switched on, takes off in a cold state, warms up and gradually gets to a hot state. In a hot state, a computer is always roaming in an attempt to find something to do. In a situation where the public electricity, such as that of PHCN in Nigeria, is cut suddenly, the computer would suddenly be brought to a halt. The sudden power cut may cause the computer to lose the memory of some basic house keeping operations when power eventually returns and the computer is switched on. The sudden power cut may also cause irreparable damage to the file the computer was processing at the time the power was suddenly cut.

3.3 The Line Voltage Transformer

We have noted that computers are built to operate within a specific range of voltages. In the United States of America, computers are built to operate on 110V. A voltage transformer is a device meant to step up or step down a voltage as the case may be. In Nigeria, for example, a 110V computer requires a voltage transformer to step down the 240V to 110V. Similarly, in the USA, if a 240V current is connected directly to a 110V computer, the computer power unit will blow up almost immediately.

Today, the technology has improved tremendously such that if a 240V current is connected directly to a 110V computer, only a fuse, rather than the power unit will blow up. It is worth mentioning, too, that there is an advanced technology today which permits a computer to operate effectively and efficiently with the power line voltage ranging between 110V and 240V. The technology supports an inbuilt switch which can be operated at two terminals, namely the 110V terminus and 240V terminus. In recent times, the technology has been improved upon such that computers are manufactured in such a way that they can sense the voltage that is adequate. Thus, if one connects a 110V computer to a 240V current, the 110V computer has an in-built line transformer which automatically steps down the 240V current to 110V.

3.4 The Uninterruptible Power Supply System (UPS)

An Uninterruptible Power System (UPS) is an auxiliary hardware that is capable of:

- Converting the public electricity raw line into fine line, that is, conditioning the voltage that is fed into the computer.
- Storing electrical energy when the public electricity line is live
- Releasing the stored electrical energy to the computer when the public electricity line is dead.

4.0 CONCLUSION

The computer is an expensive resource and as such requires adequate protection from electrical damage. Similarly, the UPS is an expensive resource; hence there is the need for it to be protected from electrical damage, too. Therefore, in practice, it is desirable that the UPS be protected by a voltage stabiliser which is rugged and less expensive. The configuration presented in Figure 5.1 is an example of a computer environment characterised by multiple levels of protection from electrical damage. This arrangement is desirable in a situation of electrical surge and blow out.

5.0 SUMMARY

In this unit we have examined the following:

- Auxiliary devices create a facilitative and conducive environment for smooth operation of computers and the user.
- Voltage stabilisers help to protect computing equipment from damage due to power surge.
- UPS protects the computing equipment and the software from power outage during computing sessions. The UPS with the help of its internal battery stores electrical energy while power is on and releases power stored to the computer whenever power is off. This enables the user to end the working session and shut down normally.
- A voltage transformer is a device meant to step up or step down a voltage as the case may be.

6.0 TUTOR-MARKED ASSIGNMENT

With the aid of an annotated diagram, describe the arrangement of the following auxiliary equipment: the UPS, the line voltage transformer and the voltage stabiliser in relation to PHCN power source and the computer.

7.0 REFERENCES/FURTHER READING

Akinyokun, O.C, (1999). *Principles and Practice of Computing Technology*. Ibadan: International Publishers Limited.

Balogun, V.F., Daramola, O.A., Obe, O.O., Ojokoh, B.A., and Oluwadare, S.A., (2006). *Introduction to Computing: A Practical Approach*. Akure: Tom-Ray Publications.