AP COMPUTER SCIENCE PRINCIPLES • HOLIDAY HOMEWORK

1 Designing programs – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary

Write each word three times.

English	**Write it 3 times** (English)		
input			
output			
program			

Recall

You have used many programs – apps, games, websites:

- Every program was designed by someone to do a job.
- Big programs are built by teams working together.
- A program takes something in and gives something back.

This sheet lines up how programs are made. Each idea has a worked example.

New ideas

■ 1 Input, process, output

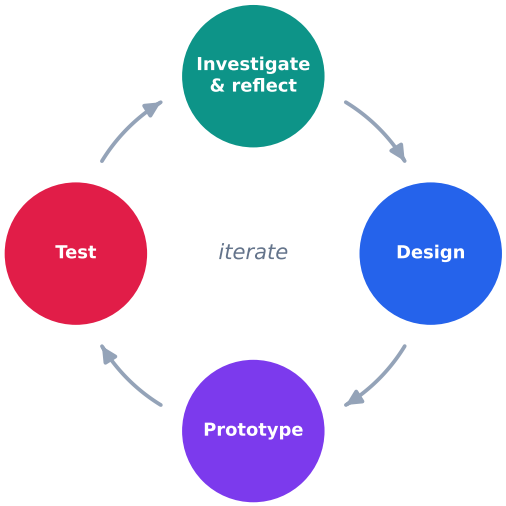
Most programs follow the **input–process–output** pattern: take an **input** , do some processing, then give an **output** .

computing system model: Input → Process → Output (IPO)

Worked example. A calculator app takes two numbers (input), adds them (process), and shows the total (output).

2 The development cycle

A **program** is built step by step: plan it, write it, test it, and improve it – often looping back to fix problems.



iterative + incremental: refine after testing; ship working pieces early

3 Working together

Large programs are built by **teams**. Collaboration – sharing ideas and reviewing each other's work – produces better, more reliable programs.

4 Purpose

Every good program has a clear **purpose** – a problem it solves or a need it meets. Knowing the purpose guides every design decision.

Watch out: writing code is only one part of making a program. Planning what it should do, and testing that it really works, matter just as much – skipping them leads to buggy software.

Practice

Try these in order. The methods are all above.

2.1 State the three parts of the input–process–output pattern. [3]

2.2 For a program that finds the average of some test scores, state its input, process, and output. [3]

2.3 State two things that happen in the program development cycle besides writing code. [2]

2.4 State one benefit of programmers working in a team. [1]

2.5 Explain why knowing a program's purpose is important. [1]