**PRACTICAL NO. 2**

**VariCAD :**

**VariCAD** is a computer program for 3D/2D CAD and mechanical engineering which has been developed since 1988 in the Czech Republic. VariCAD runs on Windows and Linux. It features many tools for 3D modeling and 2D drafting. VariCAD provides support for parameters and geometric constraints, tools for shells, pipelines, sheet metal unbending and crash tests, assembly support, mechanical part and symbol libraries, calculations, bills of materials, and more.

The program includes a standard part library with screws, nuts, bearings etc. Additionally, it offers many calculation modules for, e.g., springs, beam torsion, volume, mass and center of gravity.

VariCAD allows editing of DWG files without conversion using the Open Design Alliance DWGdirect libraries. VariCAD support the [ISO](https://en.wikipedia.org/wiki/International_Organization_for_Standardization" \o "International Organization for Standardization)industrial product data exchange format STEP/STP. A list of notable supported file formats is listed in the Comparison of CAD software article.

VariCAD is available for both Windows and for some time on the [Linux](https://en.wikipedia.org/wiki/Linux) OS.[[2]](https://en.wikipedia.org/wiki/VariCAD#cite_note-2) With the addition of support for Unicode user interface now also supports non Latin character sets such as those used in the Japanese, Chinese and Russian languages.

MASSIVE :

*Massive* is a software package developed by [Stephen Regelous](https://en.wikipedia.org/wiki/Stephen_Regelous) for the visual effects industry. Its flagship feature is the ability to quickly and easily create thousands (or up to millions with current advances in [computer processing power](https://en.wikipedia.org/wiki/Moore%27s_Law)) of agents that all act as individuals as opposed to content creators individually animating or programming the agents by hand. Through the use of [fuzzy logic](https://en.wikipedia.org/wiki/Fuzzy_logic), the software enables every agent to respond individually to its surroundings, including other agents. These reactions affect the agent's behaviour, changing how they act by controlling pre-recorded animation clips, for example by blending between such clips, to create characters that move, act, and react realistically. These pre-recorded animation clips can come from motion-capture sessions, or can be hand-animated in other 3D animation software packages.

In addition to the [artificial intelligence](https://en.wikipedia.org/wiki/Artificial_intelligence) abilities of Massive, there are numerous other features, including cloth simulation, [rigid body dynamics](https://en.wikipedia.org/wiki/Rigid_body_dynamics) and graphics processing unit ([GPU](https://en.wikipedia.org/wiki/GPU)) based hardware rendering. Massive Software has also created several pre-built agents ready to perform certain tasks, such as stadium crowd agents, rioting 'mayhem' agents and simple agents who walk around and talk to each other.

SYNFIG :

**Synfig Studio** (also known as **Synfig**) is a [free and open-source](https://en.wikipedia.org/wiki/Free_and_open-source_software) 2D [vector graphics](https://en.wikipedia.org/wiki/Vector_graphics) and [timeline](https://en.wikipedia.org/wiki/Timeline)-based [computer animation](https://en.wikipedia.org/wiki/Animation) program created by Robert Quattlebaum with additional contributions by Adrian Bentley.

Synfig began as the custom animation platform for Voria Studios (now defunct), and in 2005 was released as [free](https://en.wikipedia.org/wiki/Free_software)/[open source](https://en.wikipedia.org/wiki/Open_source) software, under the [GNU General Public License](https://en.wikipedia.org/wiki/GPL).

As a true [front-end and back-end](https://en.wikipedia.org/wiki/Front-end_and_back-end) application, it is possible to design the animation in the front-end, *Synfig Studio*, and to render it at a later time with the backend, *Synfig Tool*, on another (potentially faster) computer without a graphical display connected. Incremental and parallel rendering with Synfig Tool is supported by some open source [render farm](https://en.wikipedia.org/wiki/Render_farm) management software, such as RenderChan.

The goal of the developers is to create a program that is capable of producing "feature-film quality animation with fewer people and resources." The program offers an alternative to manual [tweening](https://en.wikipedia.org/wiki/Tweening) so that the animator does not have to draw each and every frame.