SUPINFO Academic Dept.

SUPINFO International University

INSTITUTE OF INFORMATION TECHNOLOGY

Group Projects
A.Sc.1 - Development

Contents

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1. Project Overview

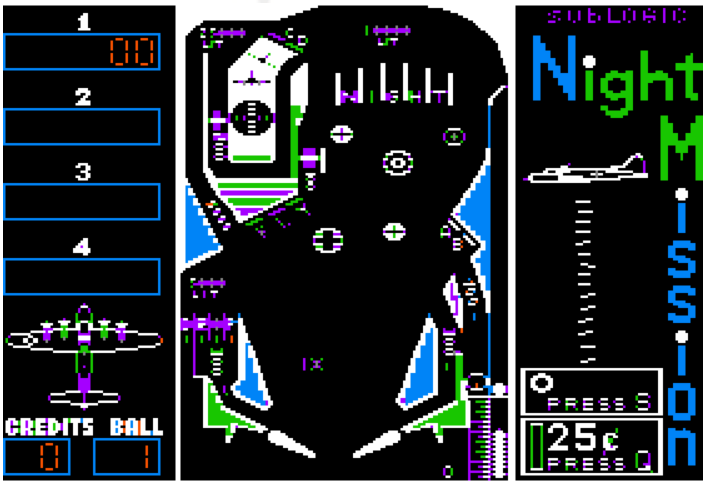
"The Good Old Days" is an entertainment company specialized in all times video games classic revivals. It wants now to rewrite the famous pinball game "Night Mission".

Your team has been chosen among several subcontractors to do the development and you are free to use whichever language/library you want, such as Python/Pygame or C/SDL. Your game must run on the three major platforms: Linux, Windows and Mac OS X.

2. Functional Expression

2.1. The game

Night Mission is a pinball game from one to four players. The original background design displays airplanes :



This game simulates finely a real pinball table in every details : look, sound, tilt, coin insertion, awards, multi-balls, bumpers, etc.

Even more impressive, all the game and physical parameters can be set by players before starting a new game.

If you are not so familiar with pinball games, here are two useful glossaries :

- The Internet Pinball Machine Database Glossary
- Glossary of pinball terms

2.2. Controls

With dedicated keys, players can :

- Insert coin (one coin each game for one player)
- Select the number of players
- Compress the spring
- Relax the spring
- Launch the ball
- Move the left flipper

- Move the right flipper
- Bump table on the right (if the player pushes too hard, the pinball tilts)
- Bump table on the left (if the player pushes too hard, the pinball tilts)
- Put the game on pause

The choice of the keys is up to you.

2.3. Scoring

Find below a non-exhaustive list of actions bringing points :

- Touch one letter : A, B, C, D, F, L, Y (and increase the bonuses of the current ball)
- Hit a bumper
- NIGHT Rollover (and increase the bonuses of the current ball)
- DROP Rollover
- etc.

Find below a non-exhaustive list of sequences bringing points :

- FLY
- DROP
- ABCD
- NIGHT
- etc.

The multi-ball is activated when both NIGHT and FLY sequences are complete. In this case, a ball which falls down in the chamber is holded. A lost ball, the ABCD sequence or a full chamber (4 balls) releases all balls.

Full details can be found in the links of part 6.

2.4. Awards

Find below a non-exhaustive list of awards :

- High score : 3 free games
- SPECIAL : D after ROP

- Exceed free game score : 1 free game
- Match
- etc.

Full details can be found in the links of part 6.

2.5. Setting mode

Find below a non-exhaustive list of game parameters which can be set by players before starting a game :

- The number of balls per game.
- Free game score.

Find below a non-exhaustive list of physic parameters which can be set by players before starting a game :

- Forward incline angle.
- Ball speed.
- Tilt effect. The value of this parameter controls the power of the effect on the ball trajectory.
- Tilt sensitivity. This parameter determines how sensitive the pinball is to bumping. Its value represents the probability that the pinball tilts if the player bumps it.

When a player has set all these parameters, he can save them in a personal mode. Three modes also exist by default : easy, medium, hard.

Full details can be found in the links of part 6.

2.6. Resources

A pretty good short description of the game :

- C64 - Wiki

A complete documentation :

- Night Mission Pinball Manual

Here are some videos of what the game should look like :

- An Apple II version
- A Commodore version
- An Atari version

An online playable version of this game :

- Night Mission for DOS

3. Deliverables

Students should include the following elements in their final delivery:

- A zip archive with the project source code. The source code must also come with the build system used (Project file, autotools...), if any.
- Project documentation, based on the template.
    - Technical documentation explaining your choices and/or implementation choices/details on the following items (at least):
        - Graphic engine
        - Algorithmic choices
        - Physics of ball trajectories
        - Collisions and reflections handling
    - Game manual

The first document is an academic document. Address the reader as a teacher, not a client. This document can be in French or in English, as you wish.

4. Graded Items

The project will be graded as follows, on a 290/270 scale:

- Technical documentation : 15 points
- Core game engine : 40 points
  - General design (in color) : 10 points
  - Insertion of coins : 5 points
  - Selection of the number of players : 5 points
  - Tilt detection : 10 points
  - The player loses his current ball when the pinball tilts : 5 points
  - The player loses the game when all his balls are lost : 5 points
- Player's action : 25 points
  - The player can compress/relax the spring : 5 points
  - The player can launch a ball : 5 points
  - The player can move the left and the right flippers : 10 points
  - The player can bump the table to the left and to the right : 5 points
- Ball trajectory : 100 points
  - Parabolic trajectory with decreasing speed when the ball does not hit obstacles (including after a tilt) : 20 points
  - Rebound handling with static obstacles : 20 points
  - Rebound handling with the flippers : 20 points
  - Speed increasing when the ball hits a bumper : 10 points
  - Deviation of the ball trajectory when the player bumps the table : 10 points
  - Trajectories of several balls handling when the multi-ball is activated : 20 points
- Score handling : 65 points
  - Score raising when the ball hits a target, a bumper, a rollover or a spinner : 20 points.
  - Score raising when the player complete a sequence : 20 points

- Activation of the multi-ball mode : 10 points
- Bonuses handling : 10 points
- The player loses his current bonuses when the pinball tilts : 5 points

- Setting mode : 25 points
  - Define three default levels (easy, medium, hard) : 10 points
  - The player can create his own levels with an editor : 10 points
  - The player can select a level before a game: 5 points
- Bonus features done by students : 20 points