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CPI 111: Game Development 1
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"Adrift"

Brief Description

The player takes command of a rescue team sent to explore a mysteriously disabled spaceship. The team consists of four characters: Holmes, Christopher, Monroe, and Nova. Using each of the team members' unique abilities, the player must guide the team through the ship to rescue trapped crew members and salvage valuable equipment. In the final level of the game, the player must shut down the malfunctioning computer that is responsible for disabling the spaceship.

Genre

The game is a platform-based puzzle game with elements of the action genre.

Target Audience

The game is designed for young adult science-fiction fans who enjoy solving puzzles.

Game Features

Character Abilities

Each character has a special ability (unlocking doors, activating computer switches, or shooting); each character also has a different movement bonus (ability to walk through gas obstacles, ability to walk through fire, ability to be thrown to high platforms by other characters, or extra speed):

Character Name	Special Ability	Movement Bonus
Holmes	Can "hack" (use) computer terminals	Can be thrown to high platforms by Christopher or Monroe (stand over other character and jump)
Christopher	Can shoot enemies	Can use gas mask to walk through gas leaks
Monroe	Can unlock certain doors	Long side-to-side jump
Nova	Can shoot enemies	Can use cyborg body to walk through fire traps

Enemies

The game will feature two types of mobile enemies, both "malfunctioning" robots: Tank Robots, which inflict melee damage, and Scout Robots, which inflict ranged damage. Enemies begin the game in specific locations within a level.

Obstacles

Obstacles include gaps that cannot be crossed or platforms that are too high for characters to jump to, locked doors, and electrical fires and gas leaks that kill the player and inflict damage, respectively. Switches (either pressure switches that are activated by a character on top of them or computer switches that must be activated by Holmes) must be activated to extend bridges and open doors. Switches also may put out fires and gas leaks, or the fire/gas can be crossed by certain characters who carry protective equipment. Certain doors are not operated by switches, and must be unlocked by Monroe.

Power-Ups, Resources, and Collectables

Characters can collect health packs to recharge their health. In some levels, "immunity packs" are available that make characters invulnerable to damage for a short period of time.

Trapped Crew Members are positioned throughout the levels. Players must collect all Trapped Crew Members before they can progress to the next level. Salvageable Equipment can be collected to boost a player's score; it has no effect on the gameplay, but provides another challenge for players.

Puzzles

In each level, the player is given between two and four of the characters to control. The objective of each level is to collect all Trapped Crew Members and then escort all the player characters to the level exit point. Different characters have different abilities to deal with different traps and obstacles, and each level requires that the characters be used in different combinations to neutralize or cross enough obstacles that all characters can reach the exit. For instance, the introductory level might require one character to throw Holmes to a high platform, where she rescues a Trapped Crew Member and then steps on a switch to open a door, permitting her colleague to cross to the other side of the screen, where the exit lies. Once the colleague has crossed the bridge, he steps on another switch to hold the door open so that Holmes can cross.

In the final level, the characters must shut down the malfunctioning main computer. To do this, they must navigate to four power conduits and deactivate them, either by using a character who can inflict damage to destroy them, or by using Holmes (who can use computer terminals) to shut them off.

Game Play

Constitutive and Operational Rules

Players use the keyboard to move characters right and left, jump, and perform a special ability (such as shooting or unlocking a door). Only one character can be controlled at a time, but the player can switch between any character available in a level by pressing the number keys. Each character has a specific amount of health which is drained by enemy attacks and fire obstacles; when any character in a level loses all of his/her health, the player must restart the level. However, health is reset between each level. Enemies also have health, and die when their health drops to zero. (They are not affected by gas obstacles, since they are robots, but they do take damage from fire.) Until all Trapped Crew Members have been rescued, the level exit point will be inactive.

Forms of Strategic Decision-Making

The player must analyze the traps and obstacles presented in each level, together with the abilities of the characters provided for the level. Then the player must determine how to move each character so that first all of the Trapped Crew Members are rescued, and then each character arrives safely at the exit point. If the player would like to collect power-ups or Salvageable Equipment bonus points, they must also consider how to move their characters to reach those items.

Forms of Resource Management

Each level has a limited amount of health packs and immunity packs. Players must choose when to collect certain items so that they do not waste them--for instance, if they need an immunity pack to cross a fire, they must not pick it up when faced with a few enemies at the beginning of a level.

Balance Between Features

The characters' abilities will need to be carefully balanced to ensure that no one character becomes a cure-all or a burden for the player. Apart from their unique ability/movement bonus combinations, characters will have identical attributes. Each level will be designed so that all the characters provided can be used at some point to clear the level.

Additionally, the puzzles in each level will be designed so that a given sequence of moves will always solve the puzzle and enable the player to move to the next level. There will be no randomly generated obstacles to disable the player through no fault of their own, something that players often find very frustrating.

Who is in Control

The player controls the actions of one character at a time. Any characters other than the one the player is controlling freeze in place; they take damage and activate pressure switches that they

are standing on, but they do not move or carry out any special activities. The programming of the game controls enemies with a simple AI.

Variation and Long-Lasting Appeal

The levels will present a wide variety of puzzles using two or more of the game's four characters in each level, along with different combinations of the obstacles, switches, and enemies/traps. Difficulty will vary somewhat irregularly; after a very hard level, the player will be “rewarded” with a slightly easier level, but will be given challenging levels again before they get bored. Once players have completed the basic goals of the game, they can play it again and attempt to get a higher score by collecting more Salvageable Equipment.

Game Objects, Sprites, etc.

Identical names indicate sprites or sounds shared between multiple objects.

Object	Sprite(s)	Sound(s)	Animations
PlayerChar (parent object for player characters)	None	None	None
CharController (controls switching between player characters)	None	None	None
PlayerIcon	PlayerIcons	None	Has several different frames, displays different frames to represent the characters available and which the player has currently selected.
Holmes (player character)	HolmesStanding HolmesR HolmesL HolmesJump HolmesSpecial HolmesThrown HolmesDied	PlayerWalk FemaleJump HolmesThrown FemaleDamaged	Walking (HolmesR/ HolmesL) Jumping (HolmesJump) Using Computer (HolmesSpecial) Being Thrown (HolmesThrown)
Christopher (player character)	ChristopherStanding ChristopherR ChristopherL ChristopherJump	PlayerWalk MaleJump PlayerShoot MaleDamaged	Walking (ChristopherR/ ChristopherL) Jumping (ChristopherJump) Shooting

	ChristopherSpecial CThrowHolmes ChristopherDied		(ChristopherSpecial) Throwing Holmes (CThrowHolmes)
Monroe (player character)	MonroeStanding MonroeR MonroeL MonroeJump MonroeSpecial MThrowHolmes MonroeDied	PlayerWalk MaleJump UnlockDoor MaleDamaged	Walking (MonroeR/MonroeL) Jumping (MonroeJump) Shooting (MonroeSpecial) Throwing Holmes (MThrowHolmes)
Nova (player character)	NovaStanding NovaR NovaL NovaJump NovaSpecial NovaDied	PlayerWalk FemaleJump PlayerShoot FemaleDamaged	Walking (NovaR/NovaL) Jumping (NovaJump) Shooting (NovaSpecial)
ScoutRobot	ScoutRobot Explosion	RobotMoving RobotShoot Explosion	Bobbing up and down (robot hovers over ground, whether standing still or moving) Explosion
TankRobot	TankStanding TankR TankL Explosion	TankMoving MeleeImpact Explosion	Rolling along the ground (TankR and TankL) Explosion
Wall	Wall	None	None
FloorCeiling	FloorCeiling	None	None
Platform	Platform	None	None
DoorOrdinary	DoorOrdinary DoorOpen	DoorOpen	Door opening (DoorOpen)
DoorUnlockable	DoorUnlockable DoorUnlock	DoorOpen	Door opening (DoorUnlock)
GasLeak	GasLeak GasLeakOff	None	Clouds of flowing gas (GasLeak)
FireTrap	FireTrap FireTrapOff	None	Flames and sparks (FireTrap)
ComputerSwitch	ComputerSwitch	None	On or off
Bullet	Bullet	None	None
BulletExplosion	BulletExplosion	None	Small explosion
PressureSwitch	PressureSwitch	None	On or off

Bridge	Bridge	DoorOpen	None
PowerConduit	PowerConduit Explosion	Explosion	Explosion
Exit	ExitInactive ExitActive	DoorOpen	Exit door opening (ExitActive)
TrappedCrew	TrappedCrew	CollectObject	None
SalvageableEquip	SalvageableEquip	CollectObject	None
HealthPack	HealthPack	CollectObject	None
ImmunityPack	ImmunityPack	CollectObject	None
NewGame	NewGame	None	None
LoadGame	LoadGame	None	None
Scores	Scores	None	None
Controls	Controls	None	None
Quit	Quit	None	None
Reset	Reset	None	None
Continue	Continue	None	None

Artificial Intelligence

Enemies are controlled with a very simple AI: Tank Robots will begin to roll towards a player character and Scout Robots will shoot at a character if there are no solid obstructions (e.g. walls or closed doors) between them. Tank Robots only move in the X direction (side to side); although they can fall, they never jump. If they see a player character on a different level, they will attempt to move so that their X value is equal to the character's. They pay no attention to gaps or traps ahead of them, meaning that they can be lured into traps easily. Both Tank Robots and Scout Robots could be in one of two states: resting (a character has not been spotted, no shooting or moving) and active (a character has been spotted, moving towards them or shooting at them). Even if a new character enters their field of view, they will continue to target the first character they saw.

User Interface

The game begins with a menu screen that presents five options to the player: New Game, Load Game, High Scores, Quit, and Controls. (Clicking Controls brings up the game info sheet with a list of the controls available to the player.) Inside the game, players see health bars above each character and enemy, representing how much health they have left. They also have two buttons along the bottom of the screen (Quit and Controls). An icon at top left tells the player which character they currently have selected, and what the arrow-key shortcut for the current character is. Between each level, users are presented with a screen that announces that the level has cleared

and has been saved, and gives the user the option to move to the next level or quit. If the user chooses to continue, they proceed to the next level.

Storyboards and Goals/Objectives

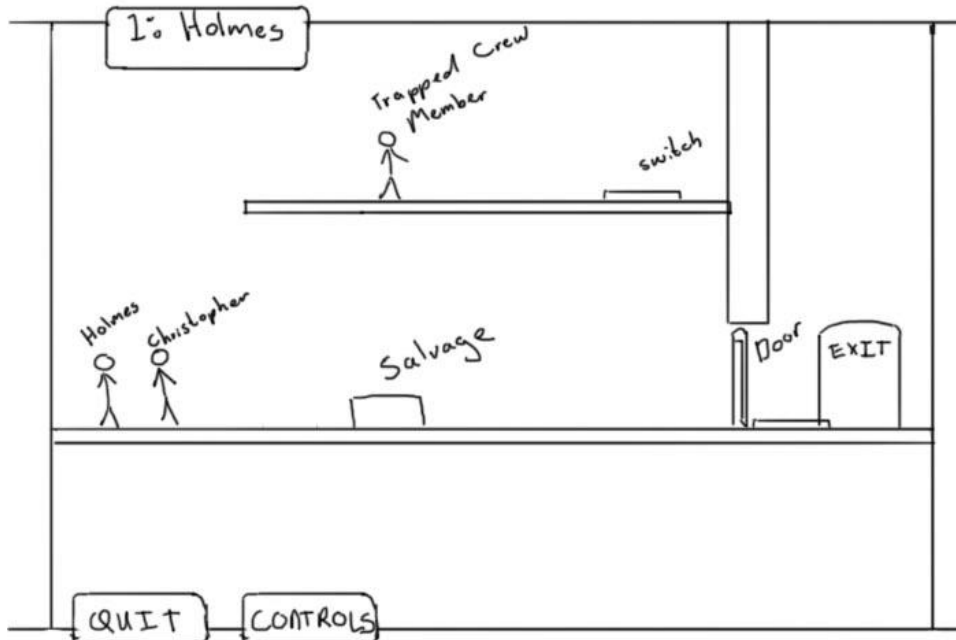
Menu Screen:



Level 1:

Characters: Holmes and Monroe

Goal: Rescue the Trapped Crew Member and escort both characters to the exit. Get used to using Holmes' throw ability and moving two characters.



Either character can collect the Salvageable Equipment. Use Christopher to throw Holmes to the upper level. Holmes collects the Trapped Crew Member and stands on the switch, which opens the door. Christopher passes through the door and stands on the other switch, holding the door open for Holmes. Both characters reach the exit.

Transition Screens:

Level CLEARED!

Game Saved

Quit

Continue

Level 2

1: Holmes

4: Nova

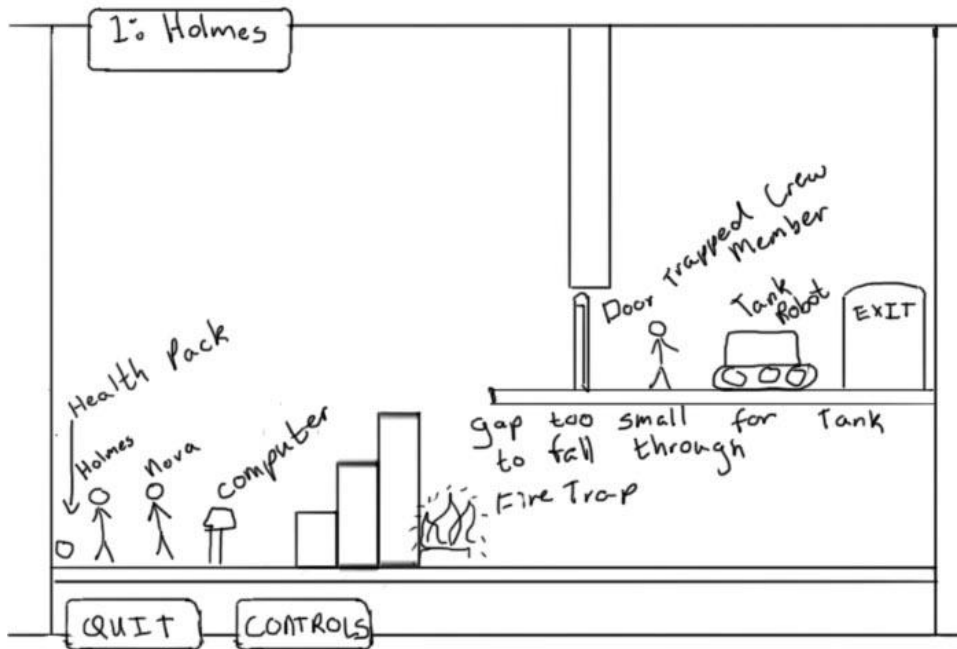
Continue

Transition screens are repeated after every level, with the appropriate level label and character names.

Level 2:

Characters: Holmes and Nova

Goal: Rescue the Trapped Crew Member and escort both characters to the exit. Get used to shooting enemies.

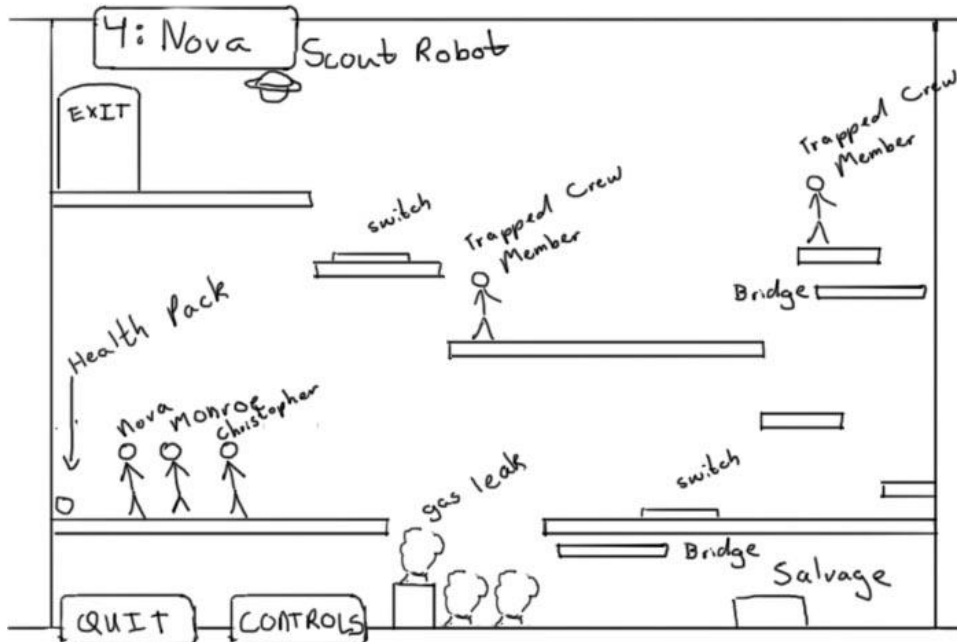


Use Holmes to activate the computer terminal, raising the door. Jump Nova to the top of the stair steps, and shoot the Tank Robot before it hits either character. Jump both characters over the gap without falling into the fire below. Either character can collect the Trapped Crew Member.

Level 3:

Characters: Monro, Nova, and Christopher

Goal: Rescue the Trapped Crew Members and escort all characters to the exit.

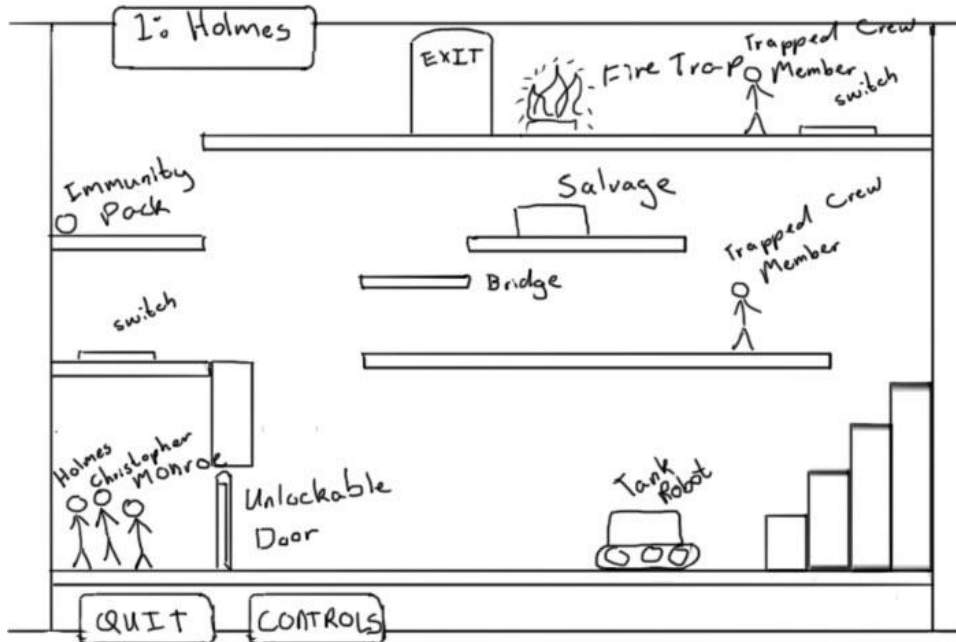


Use Monroe to jump over the gap and stand on the switch, extending the bridge for the other characters. Use either Christopher or Nova to jump up the platforms and destroy the Scout Robot. To get the crewman on the right, stand one character on the switch near the exit to extend the bridge, making a step. To get the salvageable equipment, use Christopher's special ability to walk through the gas leaks.

Level 4:

Characters: Holmes, Monroe, and Christopher

Goal: Rescue the Trapped Crew Members and escort all characters to the exit.

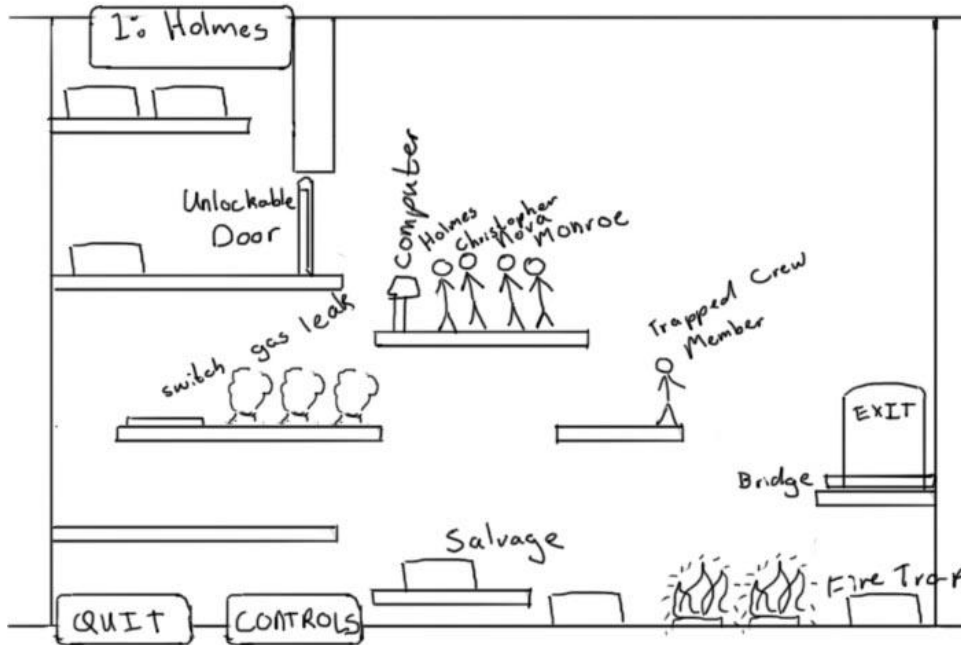


Use Monroe to unlock the door, and use Christopher to kill the Tank Robot before it attacks. Throw Holmes up to the platform above the starting position, and stand her on the switch to extend the bridge. Jump Christopher and Monroe up the platforms to the exit, collecting one Trapped Crew Member on the way. At this point, it is recommended that the player get at least one of them near the exit and get Holmes on the long platform next to the bridge before the next maneuver. Pick up the Immunity Pack with one character and quickly run them through the fire, collecting the second Trapped Crew Member and standing on the switch to extend the bridge. Jump Holmes over the bridge. Before the Immunity Pack runs out, run the character back through the fire. The Salvageable Equipment can be collected in two ways: either the player can use Holmes to extend the bridge, and jump Monroe off the bridge to the platform with the equipment, or the player can use one of the other characters to throw Holmes to the equipment platform and then return her to the switch to hold the bridge open.

Level 5:

Characters: All

Goal: Rescue the Trapped Crew Members and escort all characters to the exit.

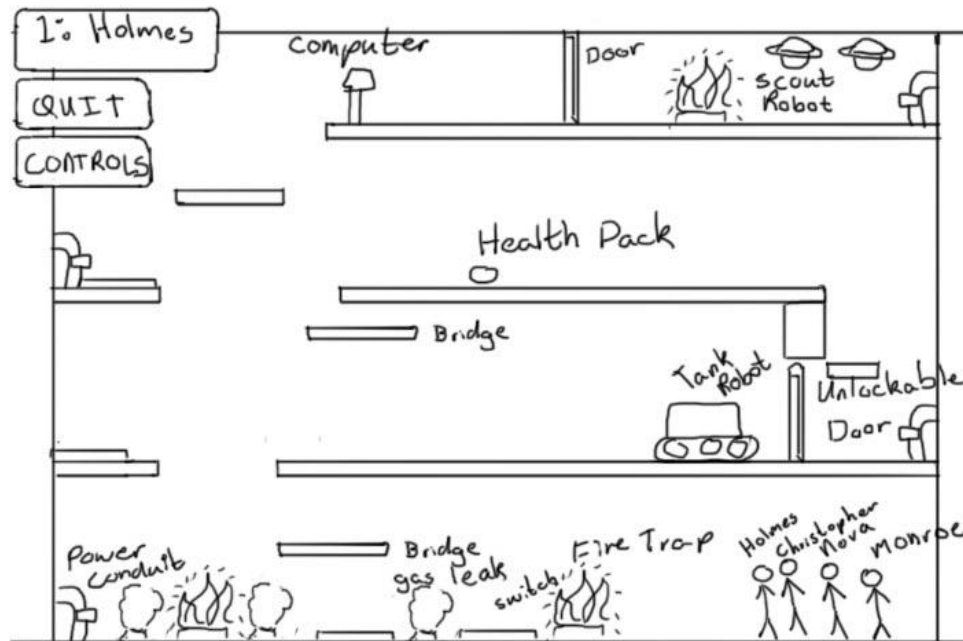


Use Holmes to activate the computer switch, extending the bridge over the fire. Jump each character down the bridge to the exit, collecting the Trapped Crew Member along the way. To reach the Salvageable Equipment at the bottom of the screen, jump Nova down and pick it up. Then jump Christopher through the gas leaks and stand him on the switch to turn off the gas, enabling Nova to jump back up. To collect the Salvageable Equipment at the top of the screen, jump Monroe over and have him unlock the door. Any character can collect the lower of the three pieces of equipment; the upper two should be collected by throwing Holmes up to the platform.

Level 6:

Characters: All

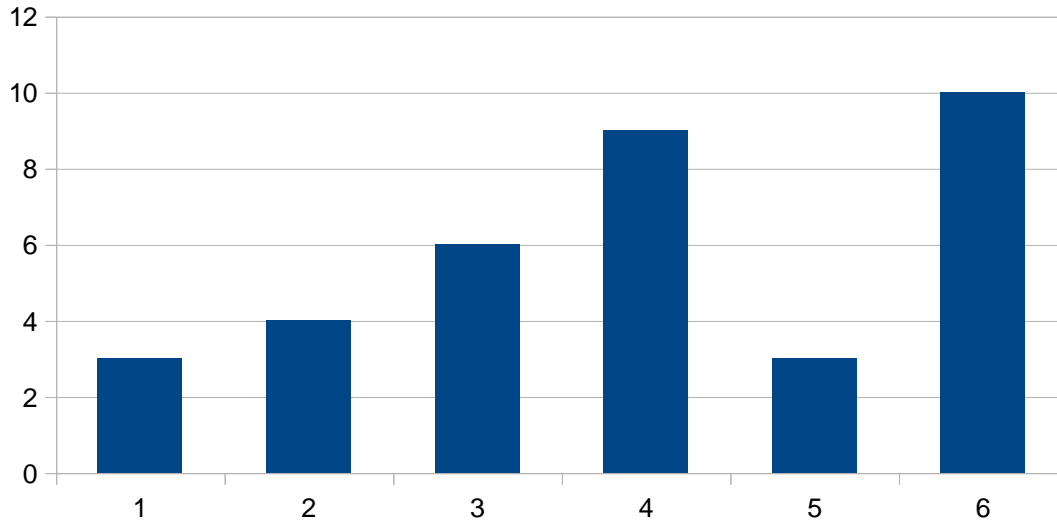
Goal: destroy or deactivate all power conduits to shut down the main computer



Take Nova through the fire and stand her on the first switch to shut off all the fire traps. Take Christopher through the gas leak and stand him on the second switch to shut off all the gas traps. Either shoot the first power conduit with Christopher or Nova, or take Holmes to it to shut it down (she can use it like a computer terminal). Use Monroe to throw Holmes to the platform with a switch on it; stepping on the switch will extend the bridge so the other characters can jump up. The Tank Robot can be dealt with in at least three ways: the player can quickly jump Christopher or Nova up to shoot it; the player can let it fall onto the bridge, run off the bridge, and then shoot it; or, the player can move Holmes off the switch so that the bridge retracts and the tank falls into the fire below, killing it.

Once the Tank Robot is destroyed, Monroe can jump up to unlock the door and Holmes, Nova, or Christopher can shut down the second conduit. To get to the third conduit, use Monroe's long jump to cross the gap and stand on the switch, extending the bridge. Holmes can operate the computer switch to drop the last door, but the player will need to grab a shooting character (Christopher or Nova) quickly to take down the Scout Robots. Send Christopher and Nova back down to the first two switches (Nova stands on the switch to extend the bridge over the fire, Christopher stands on the switch to shut off the gas, and Nova stands on the switch to shut off all the fire) and send Holmes to deactivate the last power conduit. The game ends and the high score table is displayed.

Difficulty Graph



Levels 1 through 6; difficulty out of 10 where 10 is the hardest level of the game.

Note that the difficulty graph reflects minimum effort (collect all Trapped Crew Members and go to exit). Some levels (particularly Level 5) offer challenges in collecting Salvageable Equipment that are not necessary to progress to the next level.

Resource Management

Because I am working alone on this project, I will be responsible for all art, sounds, and programming for this assignment. I intend to make all the art for the game, and all the programming. However, sounds will be obtained from other sources such as movie editing software, online sound effect repositories, or Game Maker's content bank. (All sounds will be licensed for non-commercial use and will be used with attribution.) No money will be used for this assignment; Game Maker and my sound sources are free, and I already own programs I can use to make my game art.

I intend to have finished or nearly finished my game art (at least having a basic, if non-animated, sprite for every object) by the end of Spring Break. By the end of the next week (April 1st) I intend to have finished animating all the sprites and finding the sounds I want to use. I will then spend the rest of April programming my game.